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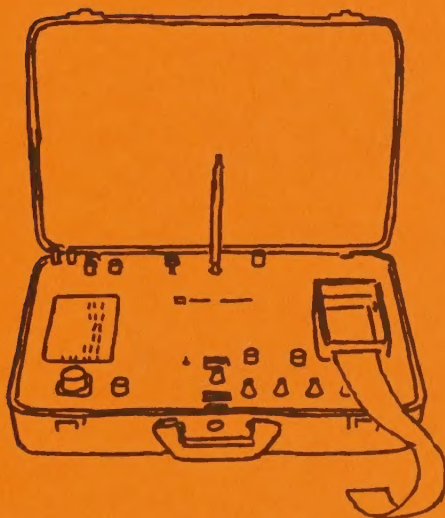
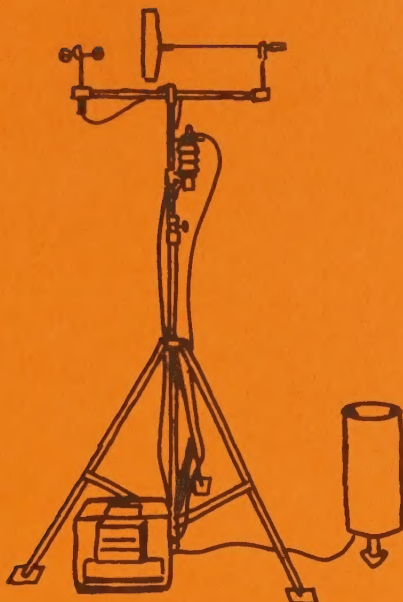
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ED&T 2425 — Remote Meteorological Monitoring of Spray Blocks

METEOROLOGICAL DATA SUPPLEMENT

1976
SPRUCE BUDWORM
PILOT TEST

HELENA
NATIONAL FOREST

JUNE 1977



USDA ■ Forest Service Equipment Development Center ■ Missoula, Montana

United States
Department of
Agriculture



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METEOROLOGICAL DATA SUPPLEMENT

1976 Spruce Budworm Pilot Test, Helena National Forest

ED&T 2425

Remote Meteorological Monitoring of Spray Blocks

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June 1977

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INTRODUCTION

The Northern Region of the Forest Service conducted a pilot project on the Helena National Forest during July 1976 to evaluate Dylox and Orthene for control of the western spruce budworm.

The Equipment Development Center at Missoula, Mont. (MEDC), was assigned responsibility for coordinating weather forecasting personnel and field weather checkers and for maintaining records of meteorological phenomena during the project.

Participating in the pilot project also provided an opportunity to test meteorological equipment being developed and evaluated under Equipment Development and Test (ED&T) projects sponsored by the Forest Insect and Disease Management Staff.

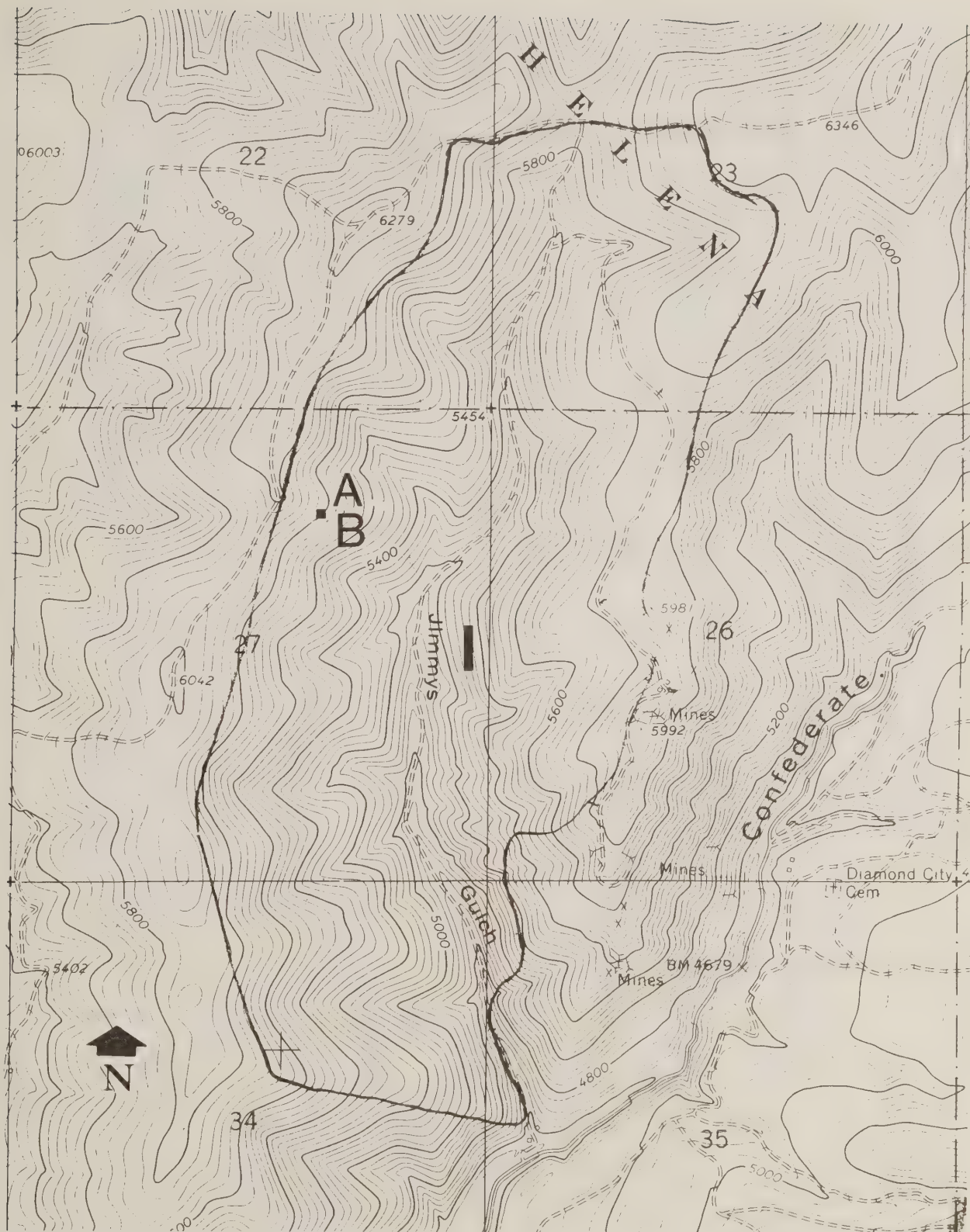
The purpose of this special report on the data gathered during the spraying is to provide interested groups with project meteorological data for their use and application. Since data were

acquired for a variety of purposes, it should not be assumed that data of this type or in this volume are necessary for all pilot projects.

An additional report analyzing equipment and interpreting meteorological and deposit assessment is in preparation.

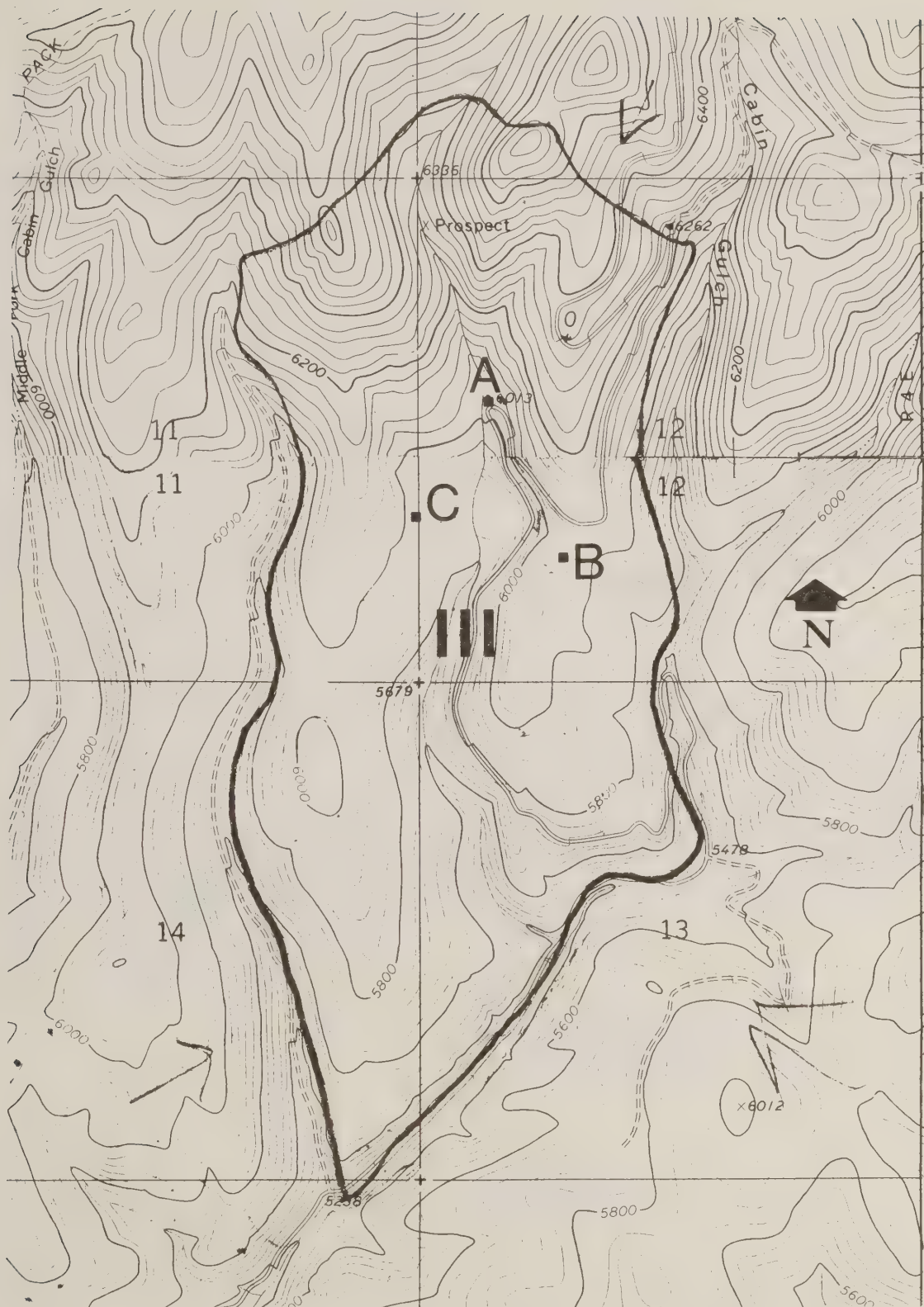
SPRAY PLOT MAPS AND SPRAY SWATH MAPS

The topographic maps of each spray plot provided in this section are arranged in the chronological order in which each was sprayed (figs. 1-6). Each meteorological site is indicated by the letter A, B, or C, and is located within its appropriate spray plot. Further information concerning the spray test plots and their meteorological sites is supplied in "Spray Plot and Meteorological Site Descriptions." In addition, planimetric swath maps of each spray plot provide information concerning the aerial flight paths chosen during each spray period (figs. 7-12).



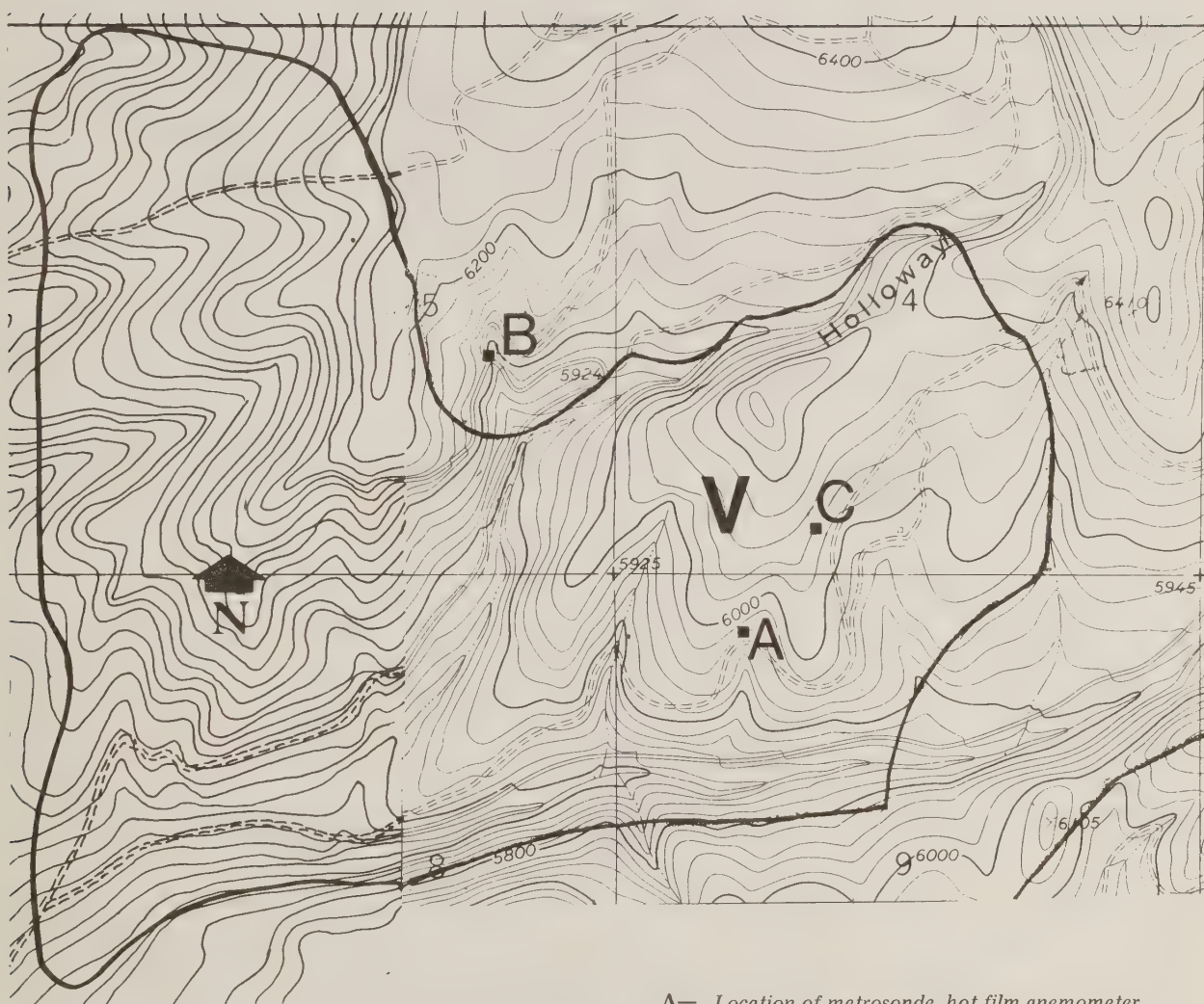
- A— Location of metrosonde, hot film anemometer
 B— Location of Beckman and Whitney 2 meter wind set

Figure 1.--Plot I - Jimmy Creek, *Orthene* application, July 3, 1976.



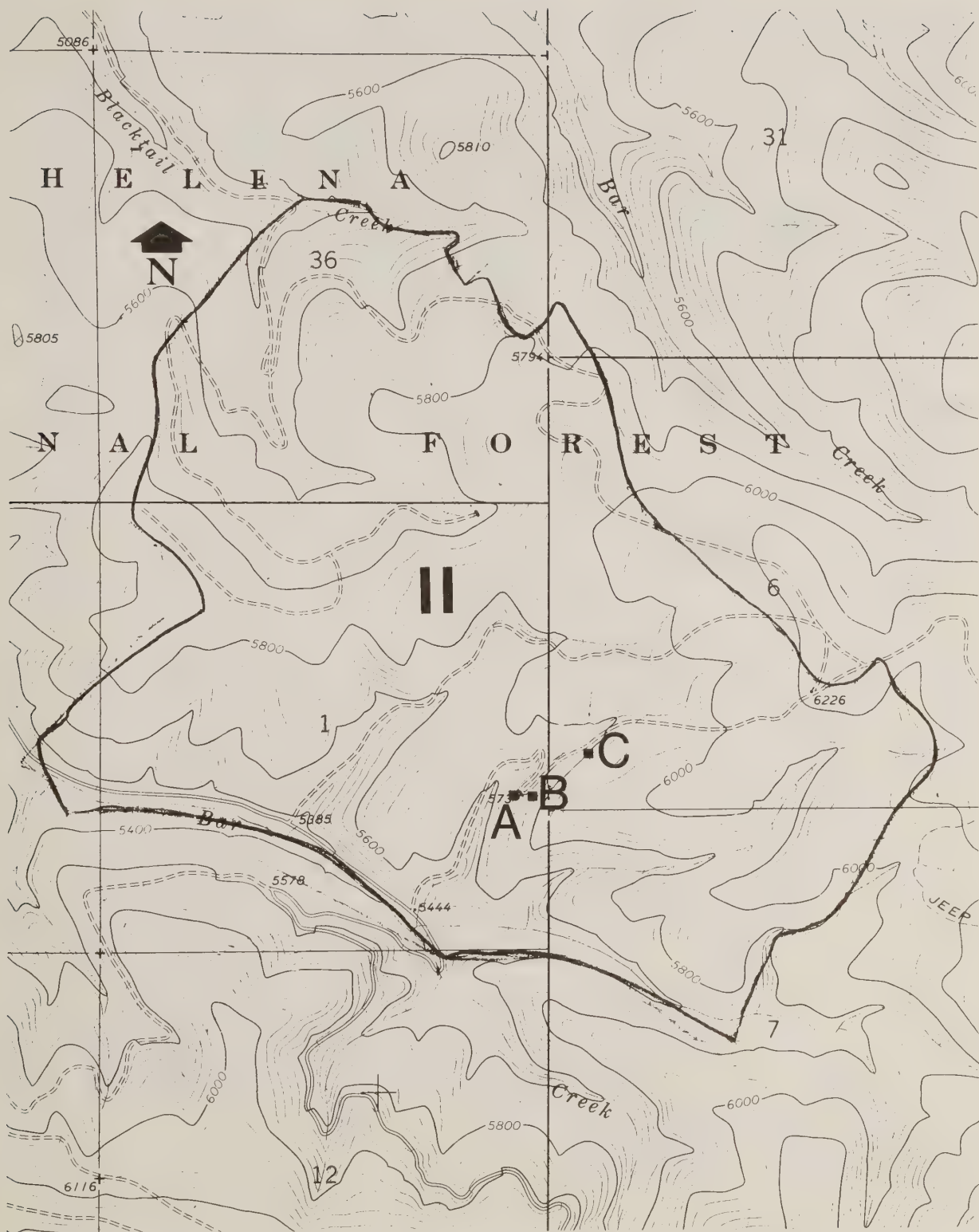
- A— Location of metrosonde, hot film anemometer
- B— Location of Beckman and Whitney 2 meter wind set
- C— Location of Climatronics 2 meter wind set

Figure 2.--Plot III - East Fork Cabin Creek, Dyllox application, July 5, 1976.



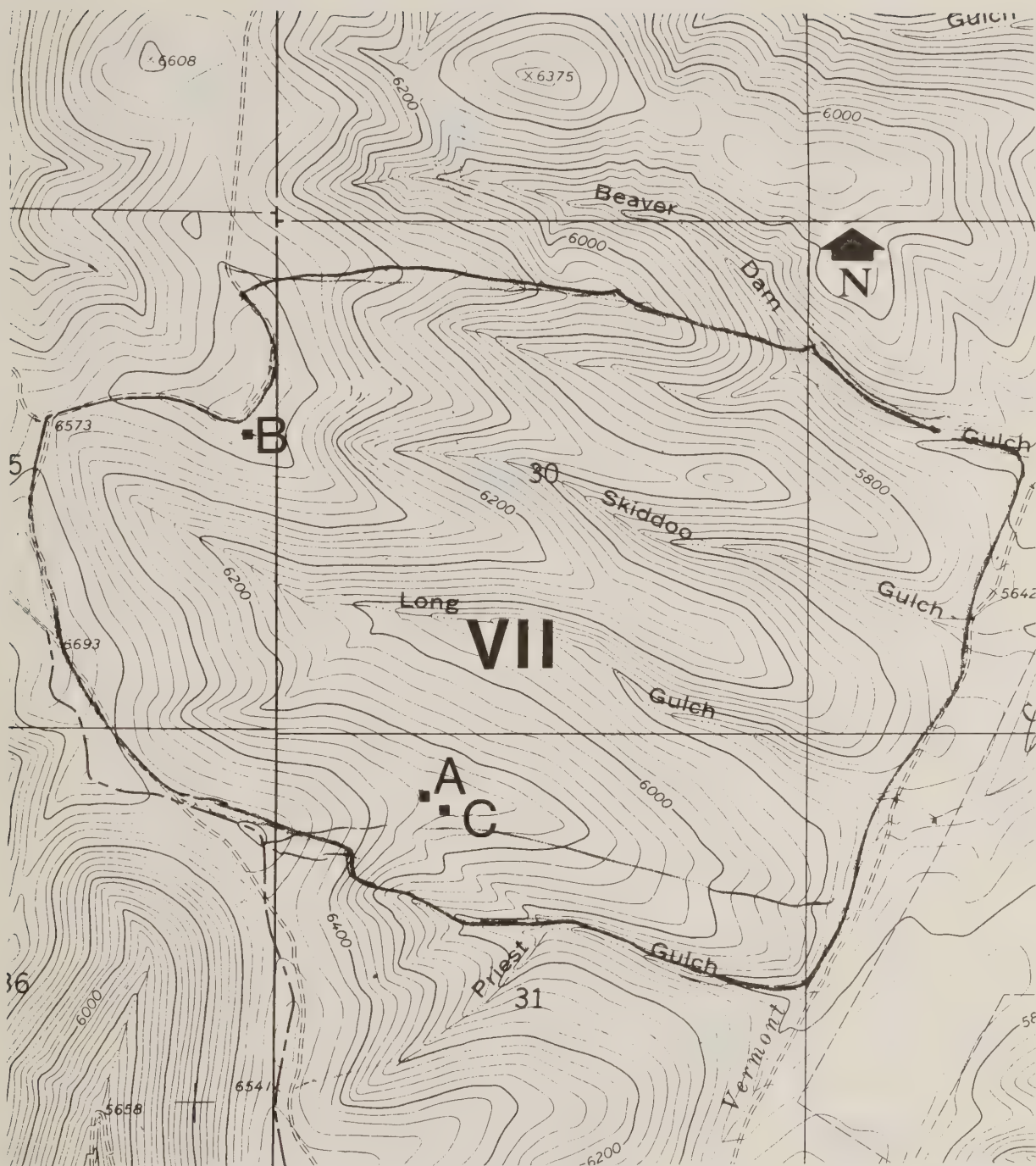
- A— Location of metrosonde, hot film anemometer
- B— Location of Beckman and Whitney 2 meter wind set
- C— Location of Climatronics 2 meter wind set

Figure 3.--Plot V - Holloway Gulch, Orthene Application, July 6, 1976.



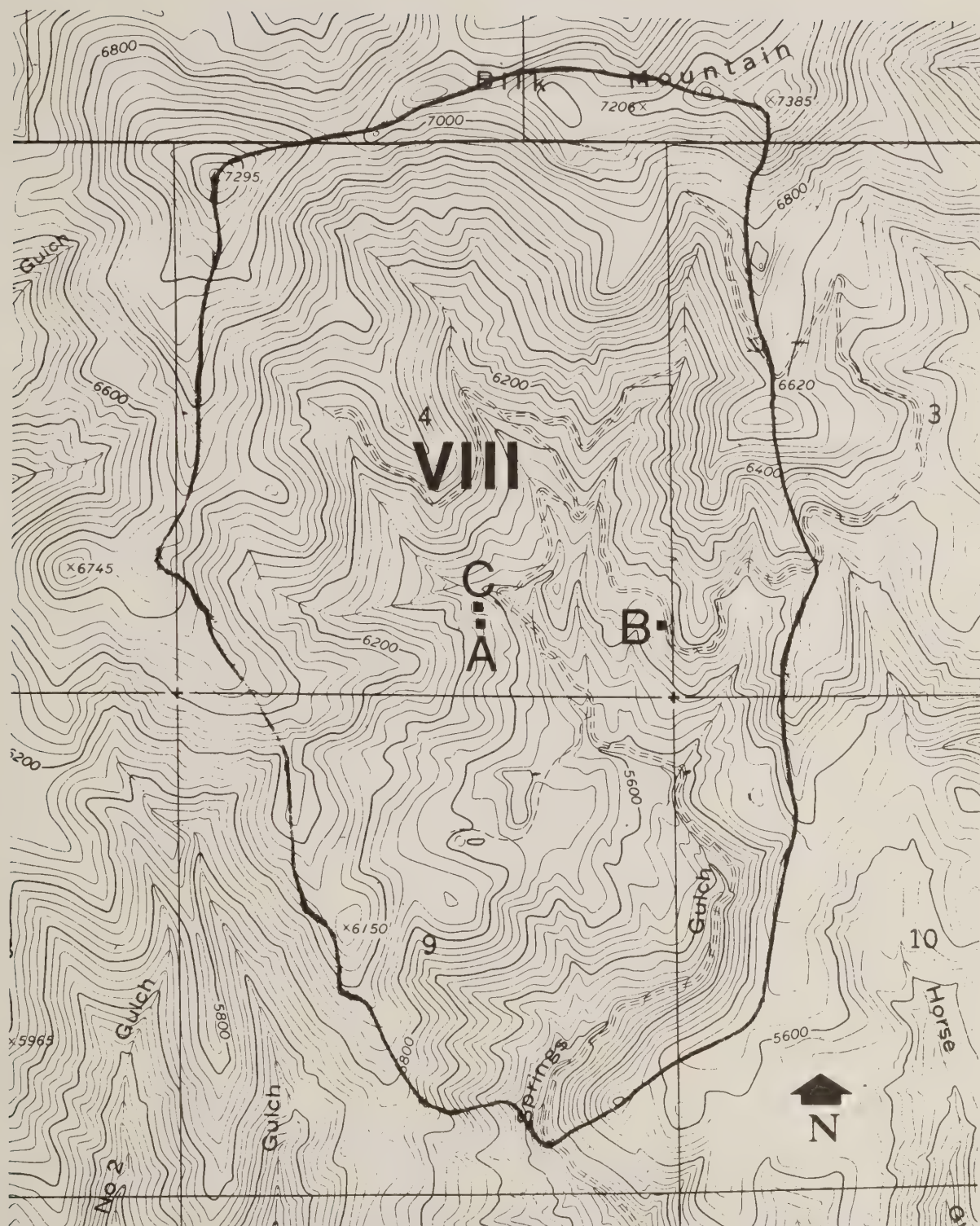
- A-- Location of metrosonde, hot film anemometer
 B-- Location of Beckman and Whitney 2 meter wind set
 C-- Location of Climatronics 2 meter wind set

Figure 4.--Plot II - Sulphur Bar, Dyllox application, July 7, 1976.



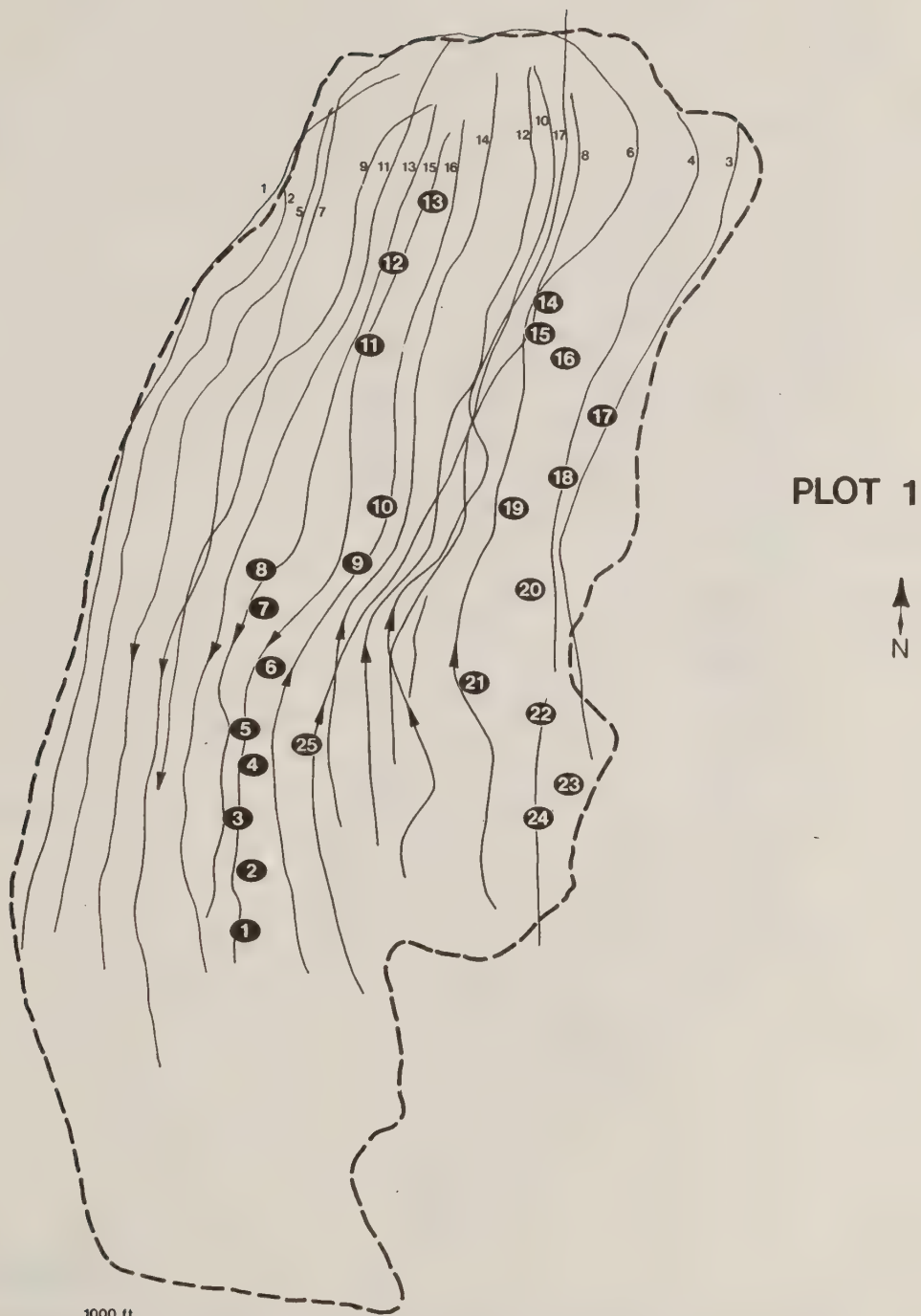
- A-- Location of metrosonde, hot film anemometer
 B-- Location of Beckman and Whitney 2 meter wind set
 C-- Location of Climatronics 2 meter wind set

Figure 5.--Plot VII - Vermont Gulch, Dyllox application, July 8, 1976.



- A-- Location of metrosonde, hot film anemometer
- B-- Location of Beckman and Whitney 2 meter wind set
- C-- Location of Climatronics 2 meter wind set

Figure 6.--Plot VIII - Spring Creek, Orthene application, July 9, 1976.



1000 500 0 1000 ft.
0.15 in. = 100 ft.

1 1/2 0 1 mi.

Figure 7.--Spray swath map, plot 1.

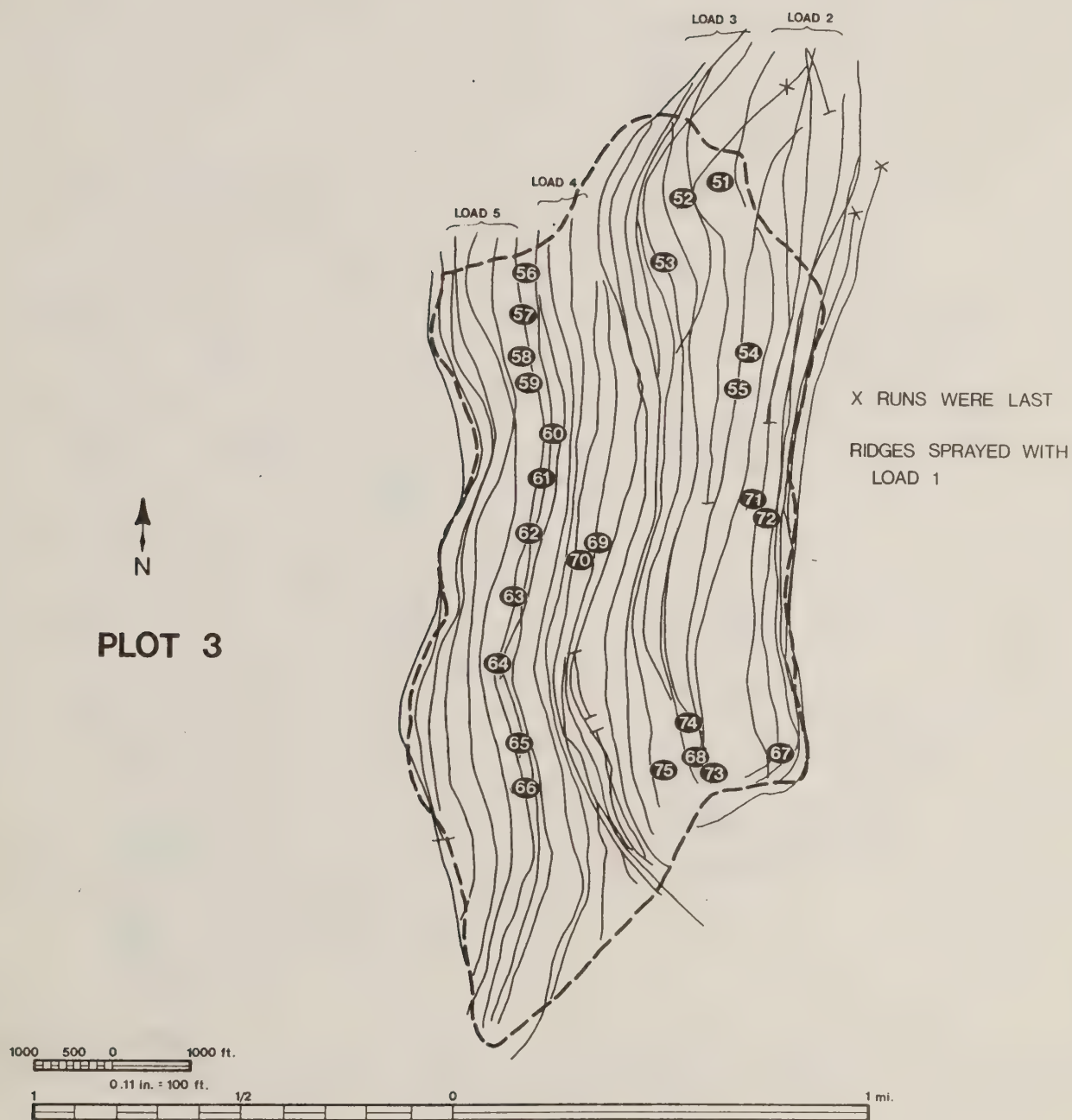
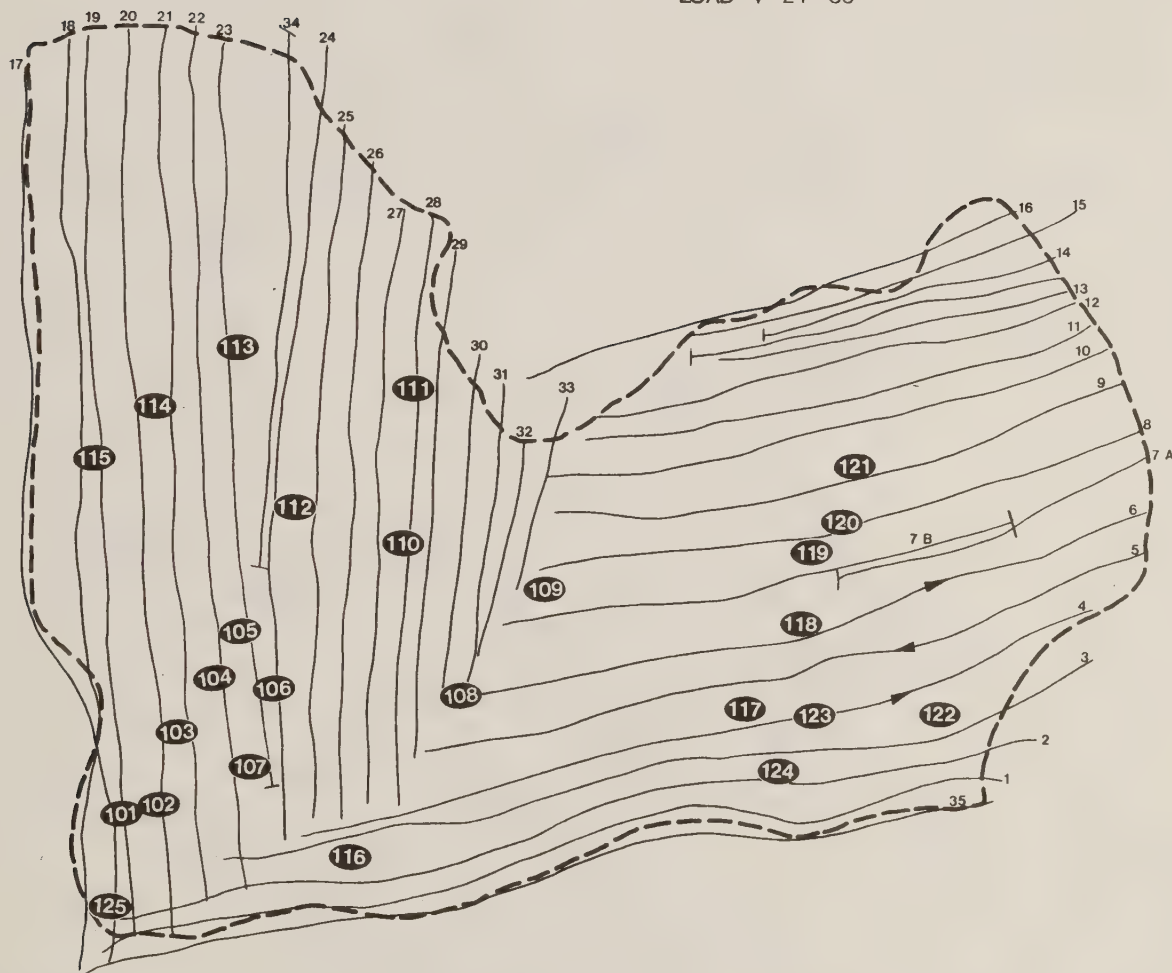


Figure 8.--Spray swath map, plot 3.



PLOT 5

LOAD 1: 1-7 A
LOAD 2: 7 B-14
LOAD 3: 15-23
LOAD 4: 24-35



1000 500 0 1000 ft.
0.15 in. = 100 ft.

1 1/2 0 1 mi.

Figure 9.--Spray swath map, plot 5.

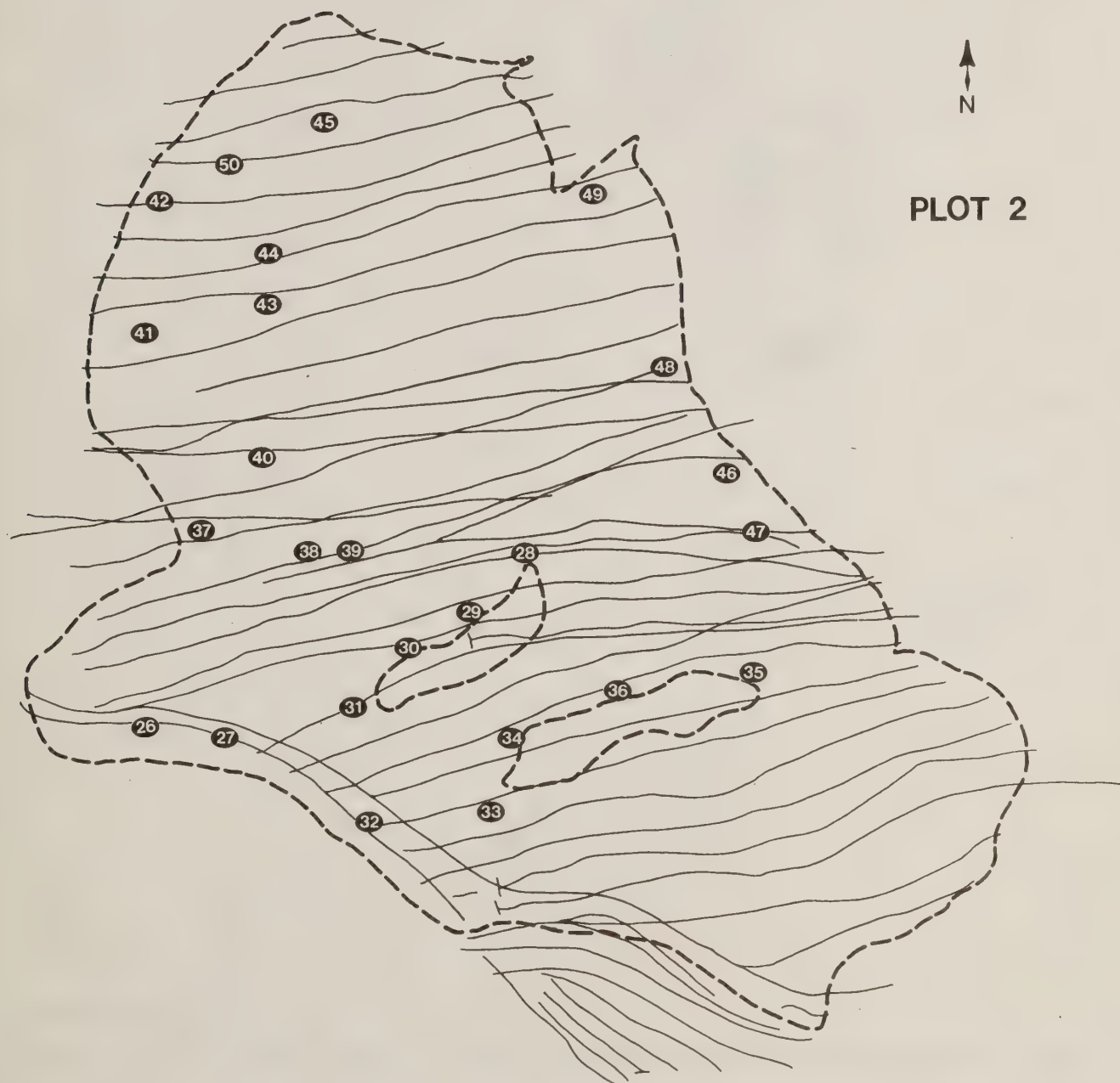
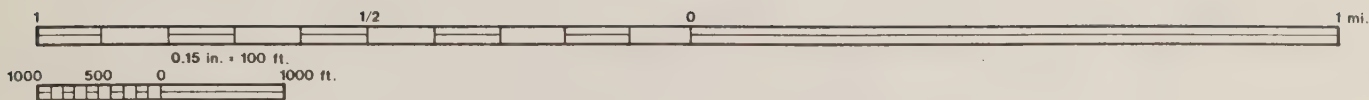


Figure 10.--Spray swath map, plot 2.

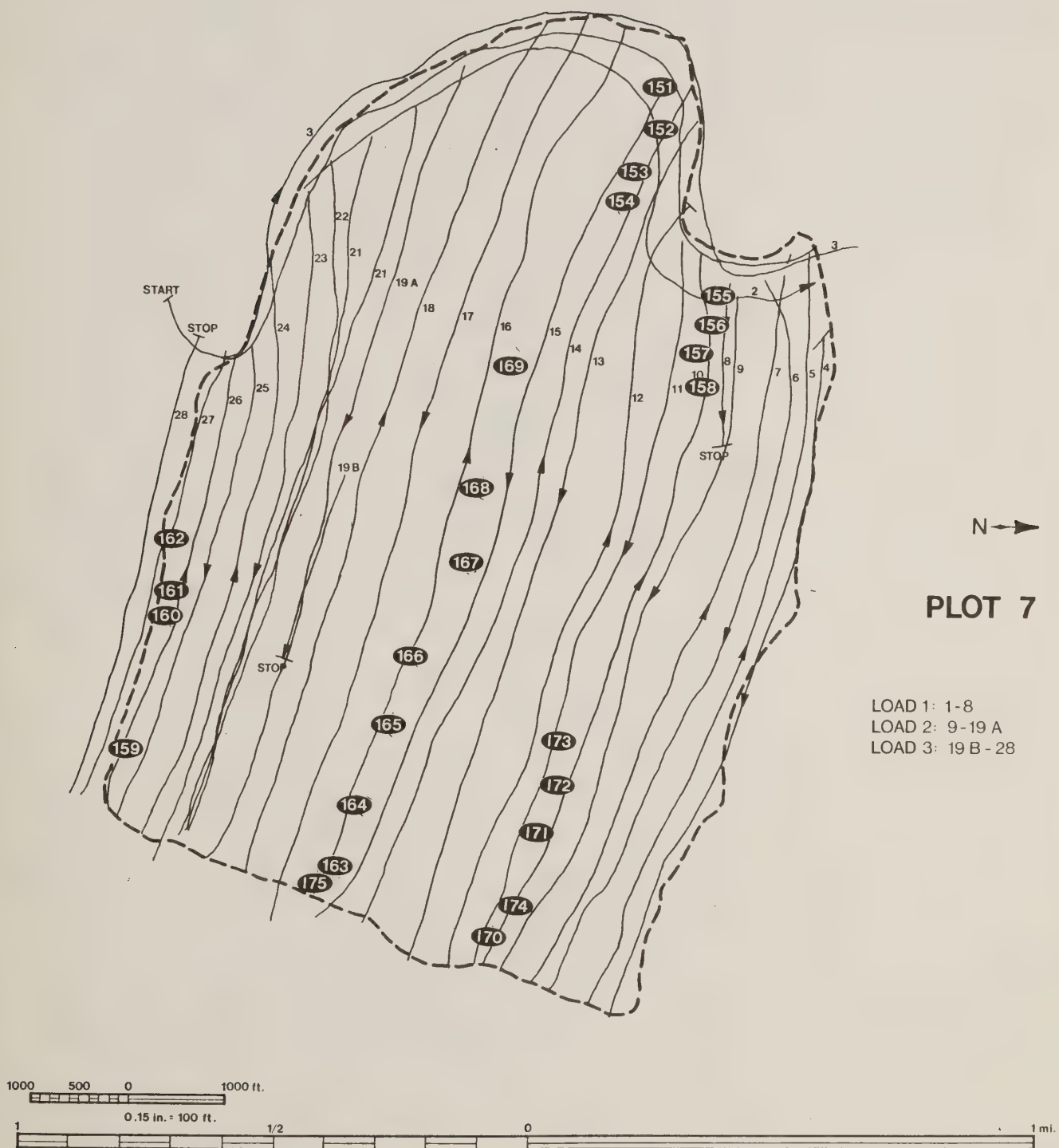


Figure 11.--Spray swath map, plot 7.

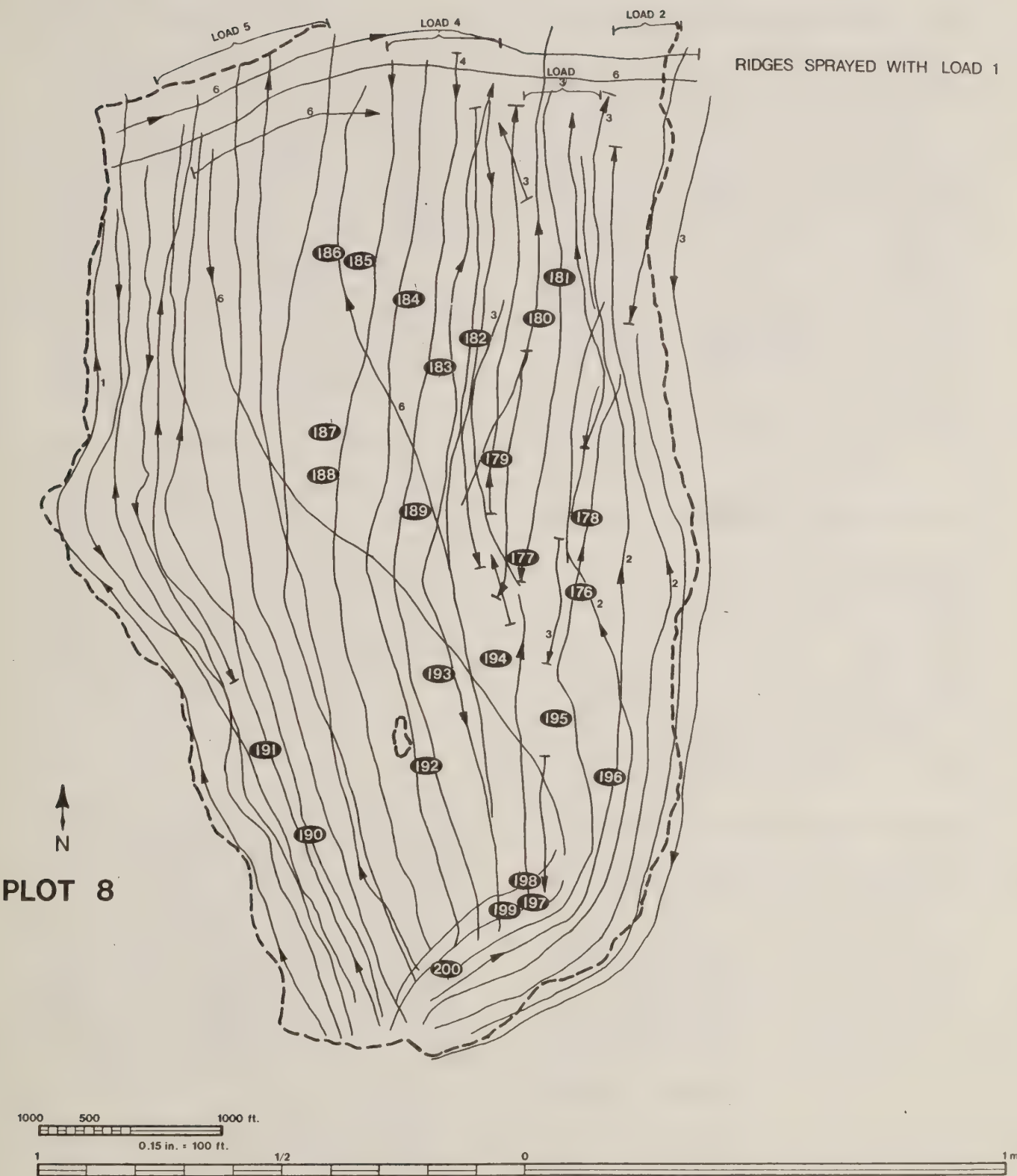


Figure 12.--Spray swath map, plot 8.

SYNOPTIC CHARTS

The following daily synoptic charts (figs. 13-19) indicate the general weather patterns during the period July 2, 1976, through July 8, 1976. The effect of these general patterns on local weather is reflected in the data that follows in this data supplement. These charts were received in Townsend, Mont., through a mobile weather unit furnished by the National Weather Service, Missoula, Mont. David Goens, a meteorologist employed by the National Weather Service, operated the mobile unit and provided daily weather forecasts for the areas encompassing the spray plots.

WEATHER DISCUSSIONS AND FORECASTS

Weather discussions and forecasts for each spray plot are provided in this supplement for the period July 2, 1976, through July 8, 1976. Formal weather briefings were held on the evening immediately before spraying a test plot. Weather discussions and forecasts were constructed through information obtained from the mobile weather unit provided by the National Weather Service.

SPRAY PLOT AND METEOROLOGICAL SITE DESCRIPTION

Each spray plot is described in this section according to its legal description, altitude range, spray date, spray time, and the insecticide sprayed. In addition, each meteorological site is described physically with information provided concerning site elevation, aspect, and instrumentation. The relationship of spray plot topography to local weather conditions recorded on the meteorological site is important for correct interpretation of the meteorological data.

Meteorological instruments employed during the 1976 spruce budworm pilot test included one Contel Corp. model 150-800 Metro-Sonde system, one Beckman and Whitney two-meter wind set, one Climatronics Electronic Weather Station (two-meter wind set), and one hot film anemometer.

Contel Metro-Sonde System Model 150-800

The Metro-Sonde system is designed to collect temperature, relative humidity, windspeed, and wind direction data to an altitude of approximately 2,300 feet. The Sonde unit, which measures temperature, windspeed, wind direction, and relative humidity data, is attached to a tethered, polyethylene balloon, allowing the instrument to be positioned at different altitudes. The data are recorded by a ground-monitored receiver. Equipment problems restricted our data collection to temperature. These data were collected immediately before and after each spray trial to altitudes of 320 feet. Occasional meteorological soundings were taken during the spray trials when time and safe working conditions allowed.

Beckman and Whitney Two-meter Wind Set

Surface wind data were collected by the Beckman and Whitney two-meter wind set using a cup anemometer (windspeed) and a wind vane (wind direction). The data were recorded on separate windspeed and wind direction recorders. Data recording began on the spray plot the evening before an early morning aerial spray trial and continued until an upslope wind was recorded the following morning after completing the trial.

Climatronics Electronic Weather Station

Surface windspeed and wind direction data were collected using a cup anemometer and a wind vane. One recorder registered both windspeed and wind direction. Periods of data collection were identical to those of the Beckman and Whitney two-meter wind set previously mentioned. The site of each instrument differed, however.

Hot Film Anemometer

The hot film anemometer is designed to record wind velocities 50 feet above the top of the forest canopy (the approximate altitude chosen for the aerial spraying). A spherical, mylar balloon raises a windspeed detection probe to this altitude to measure wind

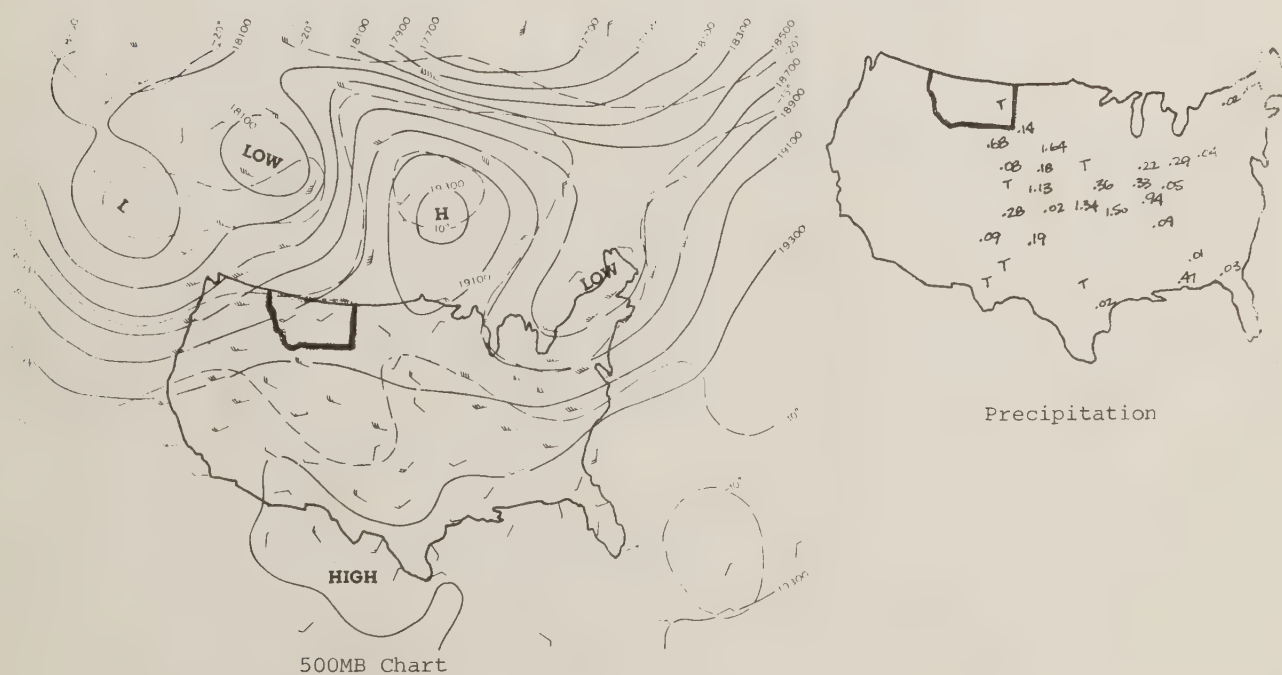
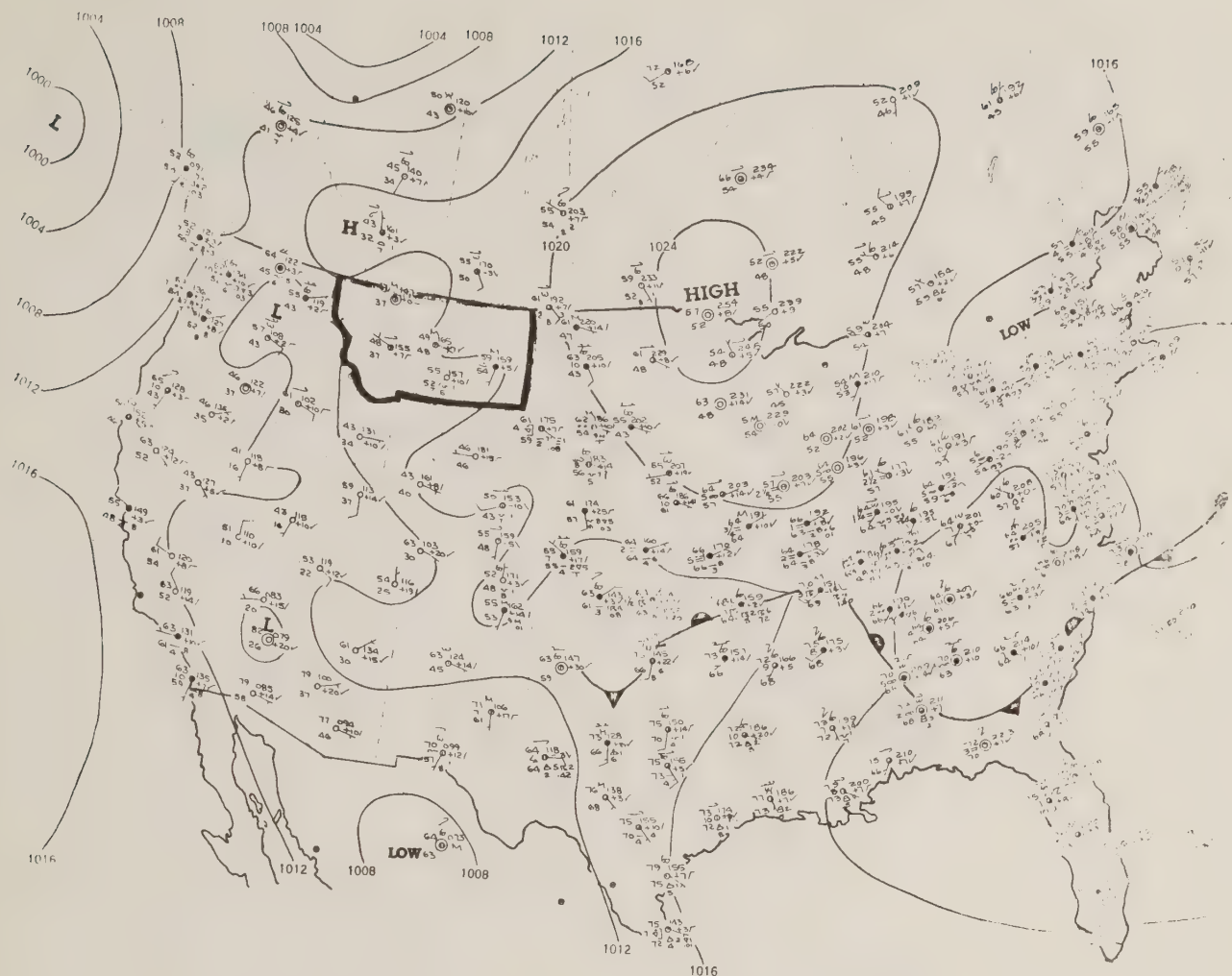


Figure 14.--Surface weather map, July 3, 1976, 1800 MDT.

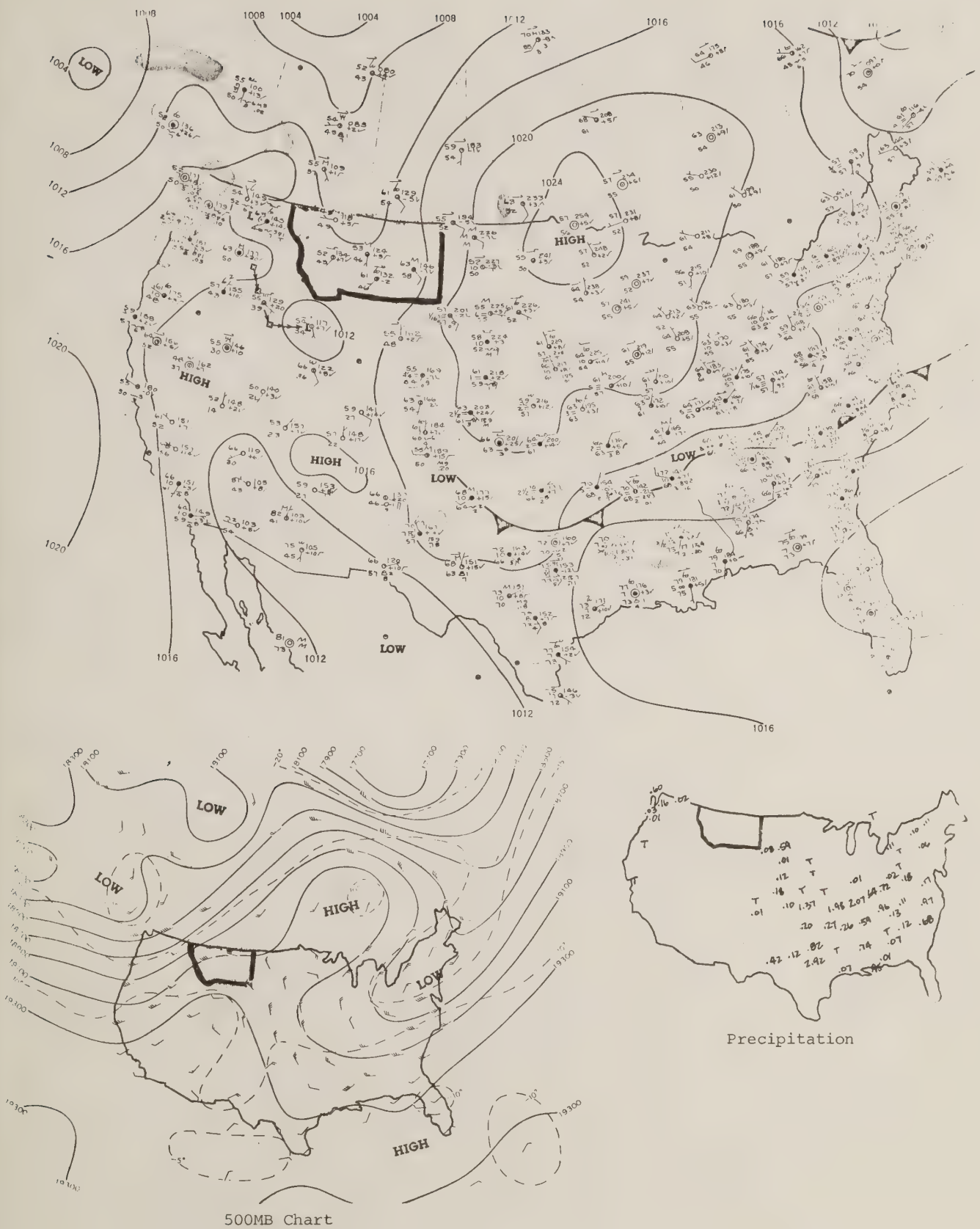
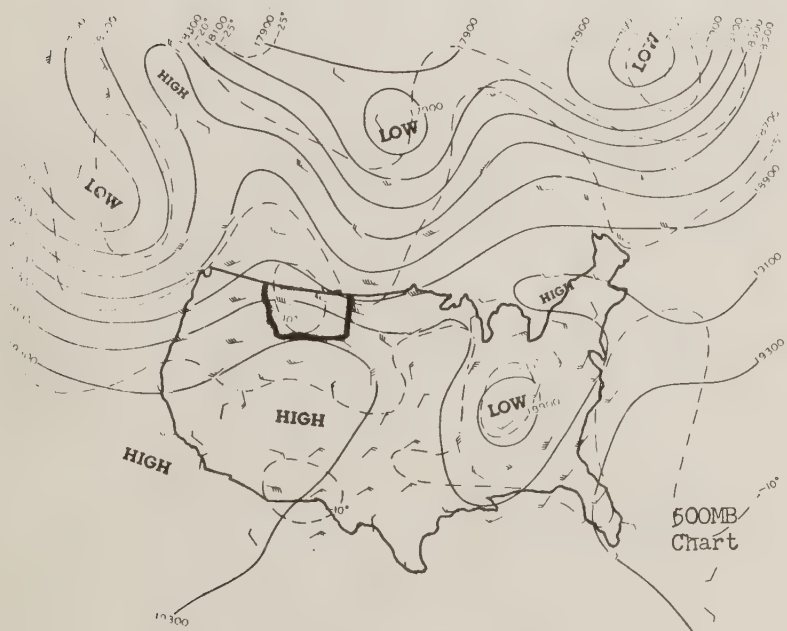
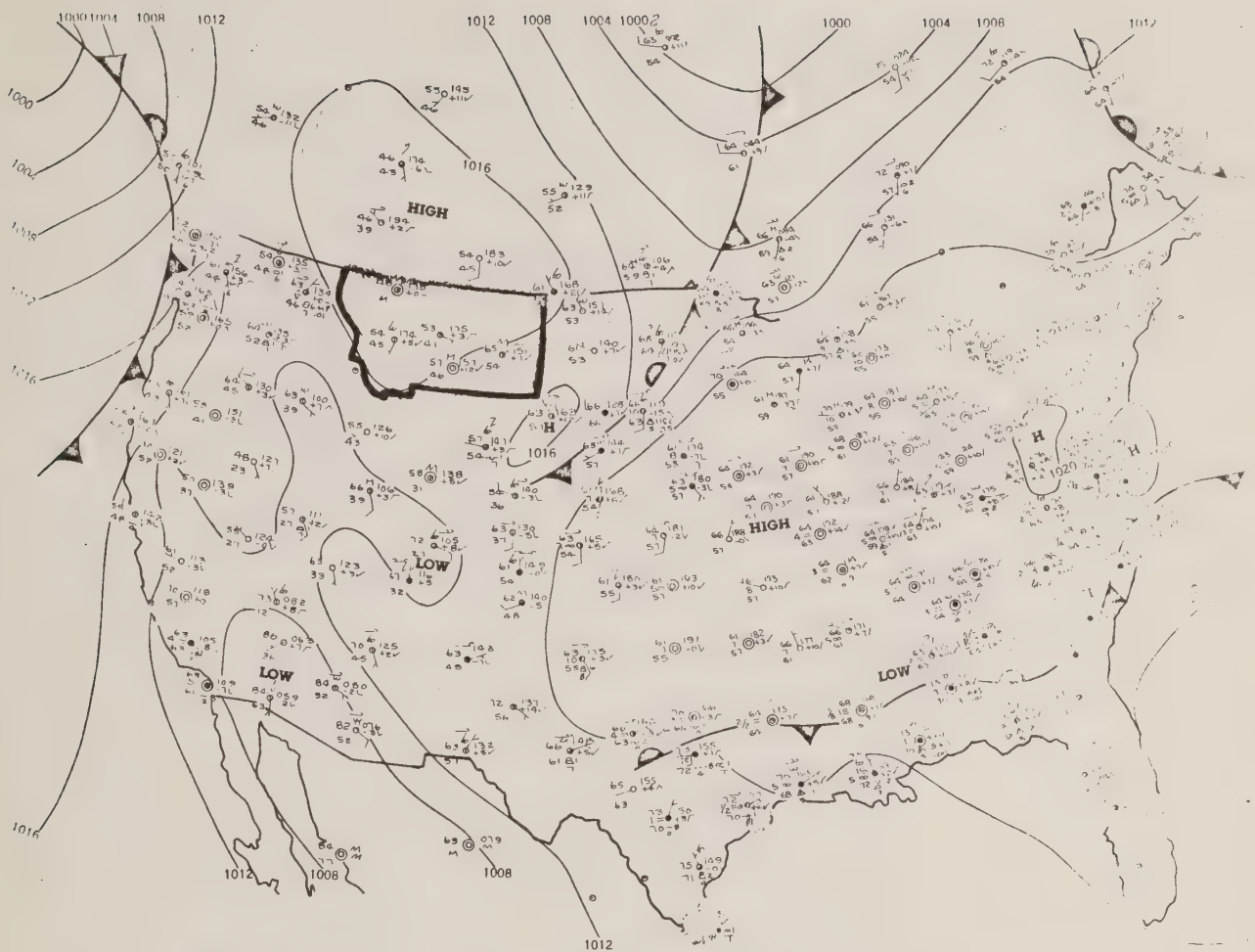


Figure 15.--Surface weather map, July 4, 1976, 1800 MDT.



500MB Chart



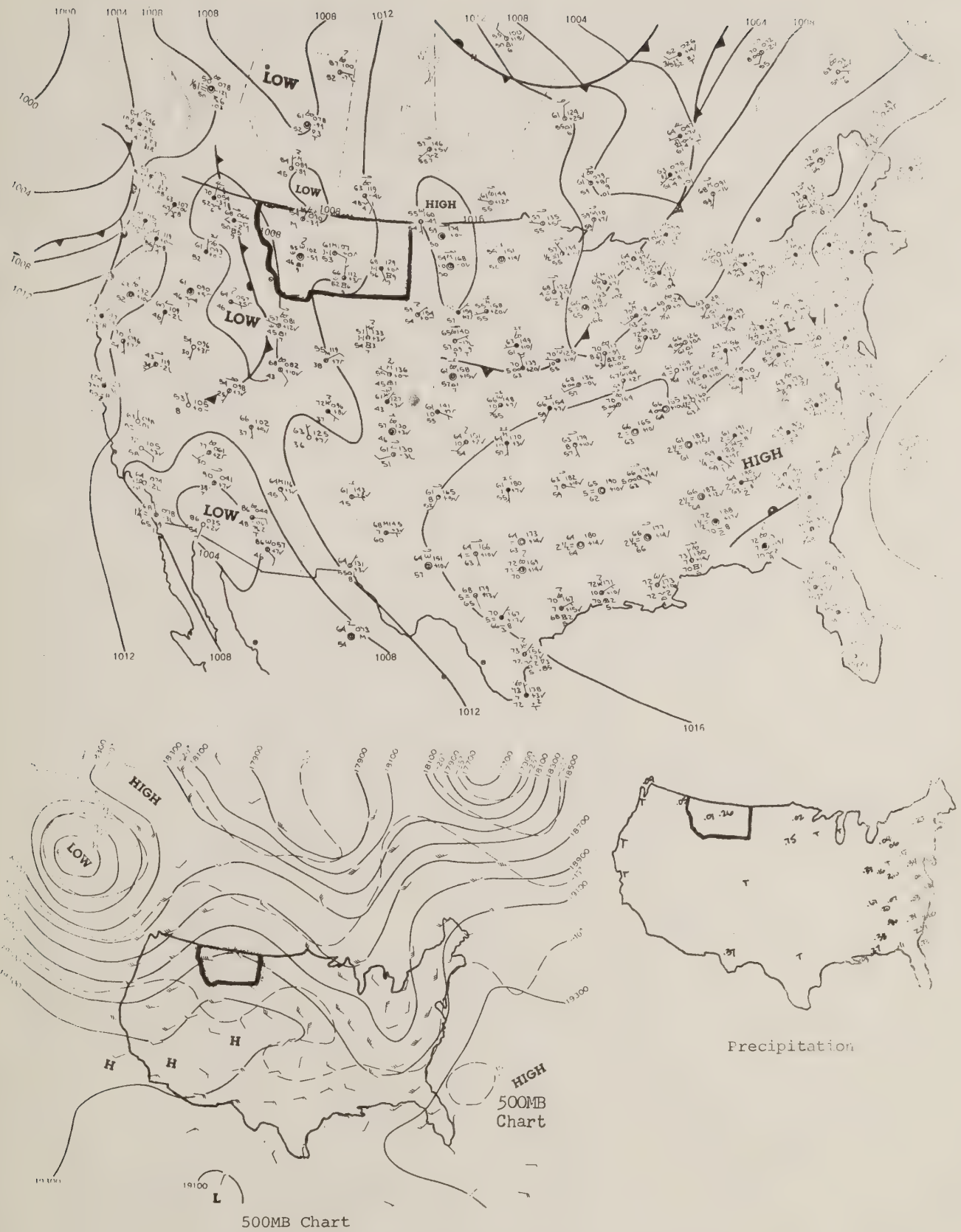


Figure 18.--Surface weather map, July 7, 1976, 1800 MDT.

velocity. Wind velocity data were recorded on the ground by an Esterline Angus model recorder during the spray trial, except when the spray ship was

in the vicinity of the meteorological site. The hot film anemometer and Metro-Sonde system were usually at the same meteorological site.

Forecaster: Dave Goens
Missoula Mobile Unit #1
Townsend, Mont.

Forecast #9
Spruce Budworm Pilot Project
Friday, July 2, 1976
Released: 1800 MDT

Weather Discussion

Flow over area remains southwesterly as upper trough off west coast effectively blocked by strong ridge over midwest. Gradients have relaxed and low level winds should remain relatively light (less than 20 knots). Airmass quite dry so precipitation threatening is nil. Warmer temperatures again in sight.

Forecasts

Saturday-Spray Time: Sunrise: 0540 MDT. Temperature at sunrise in the low 50's, warming to near 65°F on the east facing slopes by 0900. Winds down canyon/downslope 2-4 mph. Winds becoming light and variable on the east slope by 0630; upslope winds less than 6 mph through 0900. Gradient-level winds (7,000 feet) southerly 15 knots. Saturday high temperatures during the afternoon in the low to mid-80's.

Sunday: Mostly sunny and a little warmer. High temperatures 85°-90°F.

Outlook Monday/Tuesday: Continued fair and quite warm. Daytime highs 85°-90°F; lows mostly in the 50's. Condition for early morning spraying favorable.

Forecaster: Dave Goens
Missoula Mobile Unit #1
Townsend, Mont.

Forecast #10
Spruce Budworm Pilot Project
Sunday July 4, 1976
Released: 1800 MDT

Weather Discussion

Trough continues along west coast. Minor disturbance in the south-westerly flow has brought a weak shot of upper level moisture and instability to Montana. A few isolated thunderstorms have been reported this afternoon on the Flathead and also on the Beaverhead. We might see a brief thundershower in the project area tonight, but no significant precipitation for our area is in sight.

Forecasts

Tonight: Mostly cloudy with a few isolated thundershowers; warm.

Monday: Sunrise 0540 MDT. Variable high cloudiness with early morning lows in the spray area about 55°F along the drainage bottoms and near 60°F along the ridge lines. Gradient-level winds (7,000 feet) westerly 15 knots. Surface winds: Light down canyon/ downslope until 0700. Winds mostly light and variable from 0700-0900 except upslope 2-5 mph on east facing slopes...upslope winds all aspects after 0900. Monday afternoon high temperature in the low 80's.

Tuesday: Mostly sunny and warm. Early morning lows in the 50's. Favorable spray conditions.

Outlook Wednesday/Thursday: Good spray weather.

Forecaster: Dave Goens
Missoula Mobile Unit #1
Townsend, Mont.

Forecast #11
Spruce Budworm Pilot Project
Monday, July 5, 1976
Released: 1800 MDT

Weather Discussion

Weather pattern little changed. Broad, low amplitude upper ridge over the Northwest dominates the upper air charts with corresponding high pressure on the surface. A few isolated thunderstorms are again possible this evening. Threat of thunderstorm will increase Tuesday night as yet another weak upper level disturbance brushes the area.

Forecasts

Tonight: Fair and mild.

Tuesday: Sunrise 0542 MDT. Early morning skies mostly clear. Low temperatures in the spray area in the mid to upper 40's along the drainage bottom on south side of the plot and in the low 50's on the upper plot boundaries. Temperatures warming to mid-60's by 0900. Winds on the block mostly downslope (northeasterly) 2-4 mph strongest in the central portions of the plot. Downslope dominates till 0800; upslope flow by 0900. Gradient-level winds (7,000 feet) WSW 20 knots. Tuesday afternoon high near 90°F. Chance of thunderstorms Tuesday evening 20 percent.

Wednesday: Variable morning clouds. Clearing during the late morning and early afternoon. Morning low temperatures in the 50's; afternoon highs in the upper 80's. Morning spray conditions favorable.

Outlook Thursday/Friday: Increasing risk of afternoon thunderstorms, otherwise continued fair and quite warm--SPRAY ON.

Forecaster: Dave Goens
Missoula Mobile Unit #1
Townsend, Mont.

Forecast #12
Spruce Budworm Pilot Project
Tuesday, July 6, 1976
Released: 1800 MDT

Weather Discussion

Upper ridge holding over Montana today and Wednesday. Trough off the west coast is beginning to drift slowly eastward and by Friday will be questionable which will hold sway over the Treasure State. Forecast charts in disagreement on how to handle this system. Climatological trends indicate it is about time for a change, so will look for a little cooling, increasing thunderstorms threat, and stronger winds aloft by the end of the week.

Forecasts

Tonight: Few isolated thunderstorms--otherwise mostly clear.

Wednesday: Sunrise 0543 MDT. Scattered early morning clouds. Early morning lows near 50°F along Sulphur Bar Creek and in the upper 50's along the ridge line on the northeast side of the plot. Temperatures remaining below 65°F until at least 0830. Winds mostly downslope/down canyon 2-5 mph until after full sunshine on slopes (about 0800-0830); well-developed upslope on most slopes after 0900. Wednesday afternoon high temperatures 85°-90°F; 30 percent chance of afternoon/evening thunderstorms.

Thursday: Outlook favorable for early morning spray on plot 7. Early morning lows in the low 50's. Winds downslope 3-6 mph. Increasing thunderstorm risk Thursday afternoon; high temperatures 85°-90°F.

Friday: Cooler--stronger winds aloft. Spray OK for plot 8.

Forecaster: Dave Goens
Missoula Mobile Unit #1
Townsend, Mont.

Forecast #13
Spruce Budworm Pilot Project
Wednesday, July 7, 1976
Released: 1800 MDT

Weather Discussion

High pressure surface and aloft is being slowly eroded as a series of Pacific weather disturbances move onto the coast accompanied by eastward drift of Pacific trough. Airmass quite unstable as evidenced by local area thunderstorms. Cooler air aloft will push into Montana Thursday. By Friday expect trough to be nearing Idaho Panhandle. This will bring even a little more cooling. Will keep fingers crossed that Continental Divide will stall the system and still think we have an excellent shot at it for Friday.

Forecasts

Tonight: Occasional thunder and lightning persisting until near midnight. Warm.

Thursday: Sunrise 0543 MDT. Mostly cloudy during early morning. Low temperatures from the mid-50's to near 60°F on plot 7. Temperatures approaching 65°F between 0730 and 0800. Winds on the plot mostly downslope (westerly) 3-5 mph through 0800. Significant upslope development after 0900 on the lower two-thirds of the plot. Winds at 7,000 feet variable in direction 8-12 knots. High temperature Thursday afternoon in the low 80's. Variable afternoon cloudiness with 50 percent chance of thunderstorms.

Friday: Variable cloudiness with early morning lows on plot 8 again in the 50's. Winds on the block favorable to marginally favorable for spray operations.

Outlook for Saturday/Sunday: Cloudy, mild, temperatures in the 70's, showery.

Forecaster: Dave Goens
Missoula Mobile Unit #1
Townsend, Mont.

Forecast #14
Spruce Budworm Pilot Project
Thursday, July 8, 1976
Released: 1630 MDT

Weather Discussion

Low and trough off the coast continue to batter our protective ridge and appear to be gaining momentum. Weak front dissipating over the Continental Divide tonight, so we should be safe between surges tomorrow morning. Probability of precipitation will be increasing significantly, especially west of the divide Friday night, so those of us heading back to Mecca may have a showery/dampish weekend.

Forecasts

Tonight: Partly cloudy...slight chance of thundershowers.

Friday: Sunrise 0535 MDT. Partly cloudy during early morning. Early morning temperatures on plot 8 in the 50's. Winds mostly downslope (northerly) 3-5 mph. Spray conditions favorable 0730 to 0800. Friday afternoon high temperature 80°-85°F. Increasing shower threat late Friday afternoon.

Weekend Outlook: Scattered showers or thunderstorms both east and west of the Continental Divide. Highs 75°-80°F.

Site Descriptions

<u>Met. site</u>	<u>Onsite instrumentation</u>	<u>Data collected</u>
A	1. Contel Metro-Sonde system, model 150-800 2. Hot film anemometer	1. Temperature profile 2. Windspeed (50 feet above canopy)
B	Beckman and Whitney (two-meter wind set)	Windspeed and wind direction (6-foot level)
C	Climatronics Electronic Weather Station (two-meter wind set)	Windspeed and wind direction (6-foot level)

Trial 1

Spray Plot 1, Jimmy Creek - SE $\frac{1}{4}$ sec. 22; SW $\frac{1}{4}$ sec. 23; E $\frac{1}{2}$ sec. 27;
W $\frac{1}{2}$ sec. 26; NW $\frac{1}{4}$ sec. 34; T. 10 N., R. 2 E.

Plot Altitude Range (datum, mean sea level)--4,800-6,000 feet

Spray Date: 7/3/76 Spray Time: 0554-0820

Insecticide Sprayed: Dylox

<u>Met. site</u>	<u>Elevation (ft above sea level)</u>	<u>Aspect (°)</u>	<u>Description</u>
A	5,800	105	SE $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 27, T. 10 N., R. 2 E.

Trial 2

Spray Plot 3, East Fork Cabin Creek - E $\frac{1}{2}$ sec. 11; W $\frac{1}{2}$ sec. 12; NW $\frac{1}{4}$
sec. 13; E $\frac{1}{4}$ sec. 14, T. 7 N., R. 4 E.

Plot Altitude Range (datum, mean sea level)--5,250-6,720 feet

Spray Date: 7/5/76 Spray Time: 0555-0858

Insecticide Sprayed: Orthene

Met. site	Elevation (ft above sea level)	Aspect (°)	Description
A	6,013	205	SE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 12, T. 7 N., R. 4 E.
B	6,050	85	SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 12, T. 7 N., R. 4 E.
C	5,950	100	SW $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 12, T. 7 N., R. 4 E.

Trial 3

Spray Plot 5, Holloway Gulch - W $\frac{1}{2}$ SE $\frac{1}{4}$ sec. 4; SW $\frac{1}{4}$ sec. 4; S $\frac{1}{2}$ SE $\frac{1}{4}$ sec. 5;
W $\frac{1}{2}$ sec. 5; N $\frac{1}{2}$ sec. 8; NW $\frac{1}{4}$ sec. 9, T. 7 N., R. 4 E.

Plot Altitude Range (datum, mean sea level)--5,480-6,280 feet

Spray Date: 7/6/76 Spray Time: 0546-0723

Insecticide Sprayed: Orthene

Met. site	Elevation (ft above sea level)	Aspect (°)	Description
A	5,920	170	NE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 9, T. 7 N., R. 4 E.
B	6,000	120	NW $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 5, T. 7 N., R. 4 E.
C	6,080	130	SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 7 N., R. 4 E.

Trial 4

Spray Plot 2, Sulphur Bar - S $\frac{1}{2}$ sec. 36, T. 7 N., R. 4 E.; SE $\frac{1}{4}$ sec. 1,
T. 6 N., R. 4 E.; N $\frac{1}{2}$ sec. 1, T. 6 N., R. 4 E.; W $\frac{1}{2}$ NW $\frac{1}{4}$ sec. 6,
T. 6 N., R. 5 E.; SW $\frac{1}{4}$ sec. 6, T. 6 N., R. 5 E.; SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 6,
T. 6 N., R. 5 E.; NW $\frac{1}{4}$ sec. 7, T. 6 N., R. 5 E.

Plot Altitude Range (datum, mean sea level)--5,280-6,280 feet

Spray Date: 7/7/76 Spray Time: 0545-0745

Insecticide Sprayed: Orthene

Met. site	Elevation (ft above sea level)	Aspect (°)	Description
A	5,710	280	SE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 1, T. 6 N., R. 4 E.
B	5,750	290	SE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 1, T. 6 N., R. 4 E.
C	5,800	280	SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 6, T. 6 N., R. 5 E.

Trial 5

Spray Plot 7, Vermont Gulch - SW $\frac{1}{4}$ sec. 29, T. 11 N., R. 3 E.; SW $\frac{1}{4}$ sec. 30, T. 11 N., R. 3 E.; SE $\frac{1}{4}$ sec. 25, T. 11 N., R. 2 E.; N $\frac{1}{2}$ sec. 31, T. 11 N., R. 3 E.

Plot Altitude Range (datum, mean sea level)--5,600-6,693 feet

Spray Date: 7/8/76 Spray Time: 0541-0707

Insecticide Sprayed: Dylox

Met. site	Elevation (ft above sea level)	Aspect (°)	Description
A	6,300	100	NW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 31, T. 11 N., R. 3 E.
B	6,550	low area near ridgetop	SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 25, T. 11 N., R. 2 E.
C	6,300	135	SW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 31, T. 11 N., R. 3 E.

Trial 6

Spray Plot 8, Spring Creek - Sec. 4, T. 10 N., R. 2 E.; E $\frac{1}{2}$ NW $\frac{1}{4}$ sec. 9, T. 10 N., R. 2 E.; E $\frac{1}{2}$ sec. 9, T. 10 N., R. 2 E.; W $\frac{1}{4}$ sec. 10, T. 10 N., R. 2 E.; W $\frac{1}{4}$ sec. 3, T. 10 N., R. 2 E.

Plot Altitude Range (datum, mean sea level)--5,080-7,300 feet

Spray Date: 7/9/76 Spray Time: 0558-0731

Insecticide Sprayed: Orthene

Met. site	Elevation (ft above sea level)	Aspect (°)	Description
A	5,920	60	NW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 4, T. 10 N., R. 2 E.
B	5,890	250	NE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 4, T. 10 N., R. 2 E.
C	5,870	90	NW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 4, T. 10 N., R. 2 E.

SURFACE TEMPERATURE DATA

The data provided here were collected at the beginning and the end of each meteorological sounding at ground level using the Contel Metro-Sonde system. The incomplete surface data obtained in trials 1 and 4 indicate that windy conditions limited the number of Metro-Sonde soundings.

Temperature data recorded at 20 feet above the ground indicated that gusty surface winds were present at the time the data were collected, thereby making surface data collection with the tethered Metro-Sonde balloon system risky. For equipment safety, surface data were collected at the 20-foot elevation.

Surface Temperature Data

Trial 1, Plot 1 - 7/3/76

<u>Time</u>	<u>Temperature</u>	
	<u>(°C)</u>	<u>(°F)</u>
0500	8.16	46.49
0638	10.96	51.73
0659	11.30	52.33
Spray Time: 0554-0820		

Trial 2, Plot 3 - 7/5/76

<u>Time</u>	<u>Temperature</u>	
	<u>(°C)</u>	<u>(°F)</u>
0500	6.37	43.46
0528	6.59	43.86
0641	7.71	45.88
0710	8.16	46.69
0940	11.97	53.54
Spray Time: 0555-0858		

Trial 3, Plot 5 - 7/6/76

<u>Time</u>	<u>Temperature</u>	
	<u>(°C)</u>	<u>(°F)</u>
0445	11.30	52.33
0511	12.08	53.74
0631	10.74	51.32
0704	14.76	58.58
0754	13.01	55.42
0835	19.92	67.86
Spray Time: 0546-0723		

Trial 4, Plot 2 - 7/7/76

<u>Time</u>	<u>Temperature</u>	
	<u>(°C)</u>	<u>(°F)</u>
0440	14.43	57.98
0510	14.88	58.78
Spray Time: 0545-0745		

Trial 5, Plot 7 - 7/8/76

<u>Time</u>	<u>Temperature</u>	
	<u>(°C)</u>	<u>(°F)</u>
0510	11.74	53.13
0536	12.58	54.64
0619	9.95	49.91
0751	11.52 ^{1/}	52.74
0846	18.06 ^{1/}	64.43
Spray Time: 0558-0731		

Trial 6, Plot 8 - 7/9/76

<u>Time</u>	<u>Temperature</u>	
	<u>(°C)</u>	<u>(°F)</u>
0450	12.64	54.75
0515	13.42	56.16
0722	13.31 ^{1/}	55.96
0745	15.78 ^{1/}	60.40
Spray Time: 0541-0707		

^{1/} Temperature data recorded at 20 feet above the ground.

WIND PROFILE DATA

Wind Profile Graph

Information supplied by this graph (fig. 20) allows a wind direction-time comparison to be made between the different spray plots and the meteorological sites of different spray trials. Local winds were recorded according to wind direction, and its relation to the surrounding terrain. The wind categories recorded were: (1) downslope winds; (2) variable downslope winds; (3) transition winds; (4) upslope winds; and (5) variable upslope winds. The wind categories denoted by the adjective "variable" indicate meteorological conditions under which a definite wind direction can be determined, but, at the same time, the winds are not entirely directionally stable.

Highly variable winds on meteorological sites B during trials 5 and 6 made interpretations of these local winds difficult. The effects of the gradient winds overriding the local winds led to wind variability on these sites. Because no wind direction analysis can be made, the data column for meteorological sites B on spray

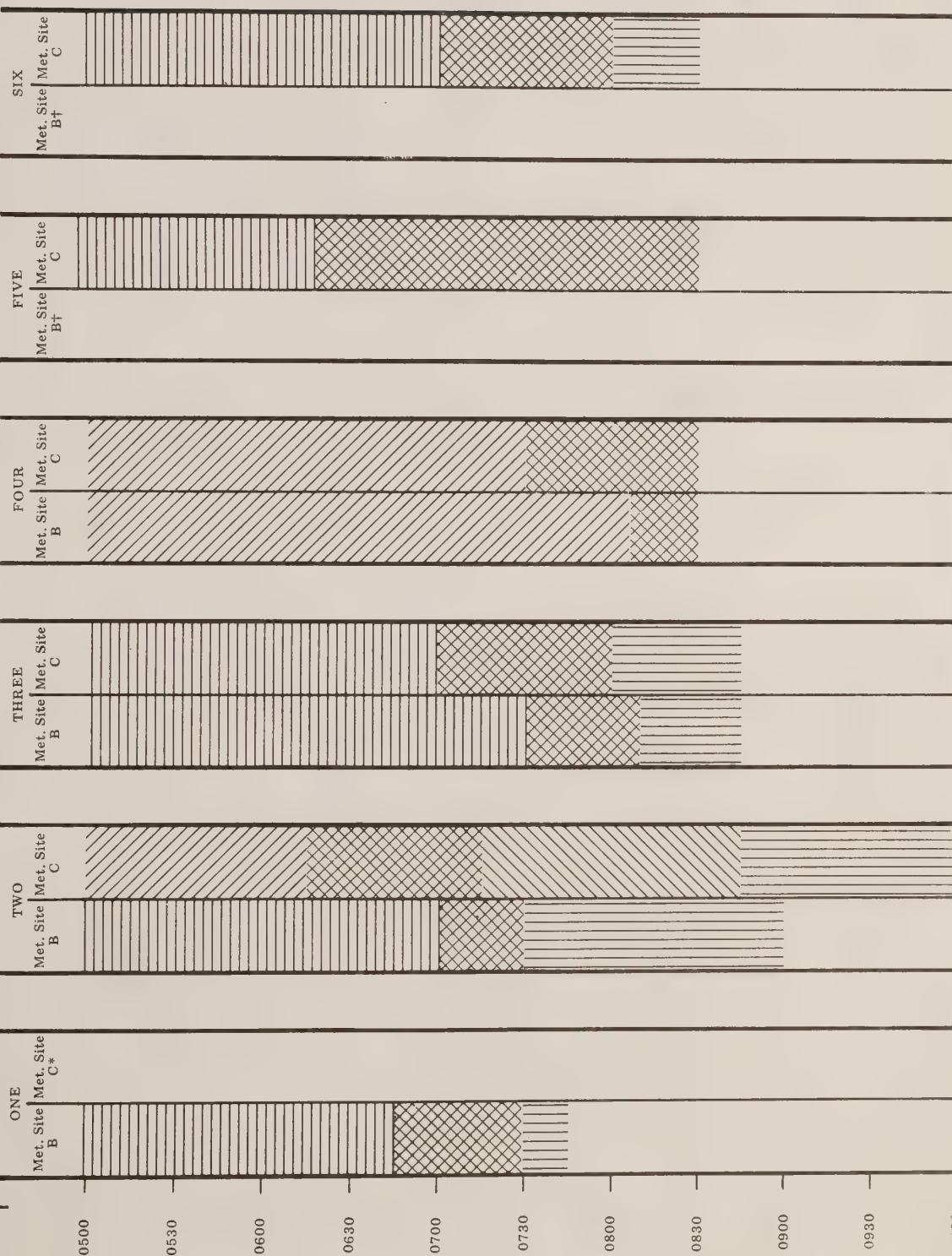
trials 5 and 6 has been left empty. The data on meteorological site C, spray trial 1, are not available because the Climatronics wind set was not used during the first spray trial. Therefore, this data column is blank.

Wind Profile Tables

This section provides the surface wind data for each individual trial in tabular form (tables 1-6). These data are the basis for the wind profile graph. In addition, wind data gathered at 50 feet above the forest canopy (approximate spray elevation) are supplied. These data were collected only during the actual spray period, and the spherical balloon was lowered on a number of occasions when the helicopter spray ship was in the area. This accounts for the lack of data in certain instances during the spray period. Due to the failure of the windspeed recorder's chart drive mechanism on plots 7 and 8, windspeed range data could not be collected. Rather, spot windspeeds at predetermined times were recorded. Data are lacking in the windspeed range columns on most of plot 7 and all of spray plot 8.

TRIALS

TIME
(MDT)



* No Data Available

+ Site - winds from 0500 to 0600

Winds from 0500 to 0600

Table 1.--Site 1 (Jimmy Creek), July 3, 1976

TIME INTERVAL (MDT)	METEOROLOGICAL SITE B 6-Ft. level (open area)					METEOROLOGICAL SITE C *					METEOROLOGICAL SITE A 50 Ft. above canopy	
	WIND DIRECTION (°)			WIND SPEED (MPH)		WIND DIRECTION (°)			WIND SPEED (MPH)		WIND SPEED (MPH)	RANGE
	AVG	RANGE		AVG	RANGE	AVG	RANGE		AVG	RANGE		
0500-0530	300	200-055		3.0	1.2-4.5						1.2	0.1-5.3
0530-0600	295	360	DS	2.8	0.5-3.7						-	-
0600-0630	290	360		3.0	1.0-3.7						-	-
0630-0700	335	360	T	2.5	1.0-3.5						0.8	0.1-2.3
0700-0730	060	360		2.5	1.0-4.2						-	-
0730-0745	105	360	US	3.0	1.0-4.0						-	-

BEGIN SPRAY- 0554

END SPRAY- 0820 DS-DOWNSLOPE, T-TRANSITION, US-UPSLOPE

*Climatronics Two Meter Wind Set not employed on test trial number one

Table 2.--Site 3 (East Fork Cabin Creek), July 5, 1976

TIME INTERVAL (MDT)	METEOROLOGICAL SITE B 6-Ft. level (open area)					METEOROLOGICAL SITE C					METEOROLOGICAL SITE A 50 Ft. above canopy	
	WIND DIRECTION (°)			WIND SPEED (MPH)		WIND DIRECTION (°)			WIND SPEED (MPH)		WIND SPEED (MPH)	RANGE
	AVG	RANGE		AVG	RANGE	AVG	RANGE		AVG	RANGE		
0500-0530	340	270-060		9.0	4.5-21.0	195	360		1.0	0.5-2.5	2.6	0.7-11.2
0530-0600	345	253-065	DS	9.5	1.0-25.0	200	045-300	V DS	0.5	0.2-1.0	1.8	0.5-4.9
0600-0630	360	250-070		8.5	1.0-25.0	190	060-250		0.6	0.3-1.0	1.1	0.3-4.4
0630-0700	320	180-160		4.5	0.5-23.0	280	135-095	T	0.8	0.5-1.0	2.5	0.2-7.5
0700-0730	005	210-153	T	2.5	0.5-6.0	040	315-105		1.0	0.5-2.0	-	-
0730-0800	055	350-125		2.5	0.5-5.8	060	360-100	V	1.5	0.8-2.0	-	-
0800-0830	055	180-145	US	4.5	1.0-6.0	050	360-100	US	1.5	0.9-2.8	-	-
0830-0900	050	180-095		4.0	0.8-6.0	070	320-115		1.5	1.0-3.0	-	-
0900-0930	-	-		-	-	090	050-125	US	2.5	1.0-4.0	-	-
0930-1000	-	-		-	-	085	040-110		2.5	1.0-5.0	-	-

BEGIN SPRAY- 0555

END SPRAY- 0858

DS-DOWNSLOPE, T-TRANSITION, US-UPSLOPE, V-VARIABLE

Table 3.--Site 5 (Holloway Gulch), July 6, 1976

TIME INTERVAL (MDT)	METEOROLOGICAL SITE B 6-Ft. level (open area)					METEOROLOGICAL SITE C					METEOROLOGICAL SITE A 50 Ft. above canopy	
	WIND DIRECTION (°)			WIND SPEED (MPH)		WIND DIRECTION (°)			WIND SPEED (MPH)		WIND SPEED (MPH)	RANGE
	AVG	RANGE		AVG	RANGE	AVG	RANGE		AVG	RANGE		
0500-0530	300	230-015		5.5	2.7-7.0	310	060-350		1.2	0.0-2.0	—	—
0530-0600	280	230-020		5.5	3.0-7.0	330	300-010	DS	0.8	0.0-1.5	2.6	0.5-6.7
0600-0630	285	225-355	DS	5.5	3.5-7.0	330	310-010		0.8	0.0-1.2	—	—
0630-0700	285	215-005		6.0	3.7-7.0	330	250-355		1.5	1.0-2.0	1.8	0.5-7.2
0700-0730	295	230-025		4.5	0.5-7.0	290	130-040	T	1.2	0.0-2.0	1.5	0.5-7.4
0730-0800	340	360	T	4.0	0.8-6.5	260	140-110		2.3	1.0-3.5	1.1	0.1-5.3
0800-0830	060	180-150		3.5	0.5-5.5	120	060-280	US	1.2	0.0-2.0	—	—
0830-0845	095	180-155	US	4.5	2.2-5.5	100	040-200		1.2	0.5-2.2	—	—

BEGIN SPRAY— 0546

END SPRAY— 0723

DS— DOWNSLOPE, T— TRANSITION, US— UPSLOPE

Table 4.--Site 2 (Sulphur Bar), July 7, 1976

TIME INTERVAL (MDT)	METEOROLOGICAL SITE B 6-Ft. level (open area)					METEOROLOGICAL SITE C					METEOROLOGICAL SITE A 50 Ft. above canopy	
	WIND DIRECTION (°)			WIND SPEED (MPH)		WIND DIRECTION (°)			WIND SPEED (MPH)		WIND SPEED (MPH)	RANGE
	AVG	RANGE		AVG	RANGE	AVG	RANGE		AVG	RANGE		
0500-0530	060	360		2.0	0.5-4.5	050	270-160		2.5	0.0-4.5	—	—
0530-0600	035	360	V	2.5	0.5-4.5	060	340-170	V	2.5	0.5-4.5	—	—
0600-0630	030	360	DS	2.0	0.6-5.5	110	360	DS	3.0	0.5-6.5	—	—
0630-0700	045	290-180		1.7	0.5-3.2	060	360-180		2.5	0.0-4.5	2.6	0.5-4.8
0700-0730	050	300-170		1.5	0.5-3.5	055	280-155		2.5	0.0-5.0	2.3	0.2-9.2
0730-0800	030	360		3.2	0.5-3.5	040	330-185	T	1.5	0.0-4.0	3.8	—
0800-0830	340	360	T	2.5	0.5-6.0	350	360		2.0	0.5-7.5	—	—

BEGIN SPRAY— 0545

END SPRAY— 0745

DS— DOWNSLOPE, T— TRANSITION, V— VARIABLE

Table 5.--Site 7 (Vermont Gulch), July 8, 1976

TIME INTERVAL (MDT)	METEOROLOGICAL SITE B 6—Ft. level (open area)				METEOROLOGICAL SITE C				METEOROLOGICAL SITE A 50 Ft. above canopy		
	WIND DIRECTION (°)		WIND SPEED (MPH)		WIND DIRECTION (°)		WIND SPEED (MPH)		WIND SPEED (MPH)		
	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	
0500—0530	—	—	2.0	1.5—2.5	300	280—325	US	1.5	0.5—2.0	4.0	2.9—5.6
0530—0600	—	—	2.3	1.5—4.3	300	275—330		1.5	0.8—2.0	4.1	3.6—6.3
0600—0630	245	360	2.0	1.3—4.0	230	090—350	T	1.8	0.0—3.0	3.7	—
0630—0700	260	360	4.5	1.0—4.0	215	080—360		1.3	0.0—3.2	4.0	—
0700—0730	245	360	2.5	1.5—5.8	230	360		1.0	0.0—2.5	4.4	—
0730—0800	310	360	2.3	1.0—5.8	240	130—100		1.5	0.2—4.0	4.6	—
0800—0830	335	360	2.0	1.0—3.0	210	310—070		2.0	0.0—4.5	4.8	—
0830—0840	125	360	1.7	1.0—3.5	—	—	—	—	—	—	

BEGIN SPRAY— 0541

END SPRAY— 0707

DS— DOWNSLOPE, T— TRANSITION, V— VARIABLE

Table 6.--Site 8 (Spring Creek), July 9, 1976

TIME INTERVAL (MDT)	METEOROLOGICAL SITE B 6—Ft. level (open area)				METEOROLOGICAL SITE C				METEOROLOGICAL SITE A 50 Ft. above canopy			
	WIND DIRECTION (°)		WIND SPEED (MPH)		WIND DIRECTION (°)		WIND SPEED (MPH)		WIND SPEED (MPH)			
	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE		
0500—0530	310	245—050	CW	2.2	1.7—2.5	270	190—015	DS	2.5	1.0—4.0	1.3	—
0530—0600	315	220—025		2.2	2.0—2.5	280	250—320		3.2	2.0—5.0	1.5	—
0600—0630	305	225—040		2.2	2.0—2.5	290	250—310		3.2	2.5—5.0	1.4	—
0630—0700	355	235—040		2.2	1.5—2.5	290	250—320	1.5	0.0—3.5	1.0	—	
0700—0730	025	240—165		2.0	1.3—2.5	310	140—050	T	0.7	0.0—2.0	1.3	—
0730—0800	095	360		1.7	1.2—2.5	010	330—120		0.7	0.0—2.0	—	—
0800—0830	075	360		1.7	1.2—3.0	110	040—220	US	2.2	1.0—5.0	2.0	—
0830—0900	020	360		2.0	1.5—3.0	—	—		—	—	3.0	—

BEGIN SPRAY— 0558

END SPRAY— 0731

DS— DOWNSLOPE, T— TRANSITION, US— UPSLOPE, CW— CROSSWINDS

TEMPERATURE PROFILE DATA

The temperature profile data provided in this section (figs. 21-35 and tables 7-21) were collected during each spray trial to altitudes of 320 feet (occasionally 600 feet) by the Contel Metro-Sonde system.

In several instances, temperature data are missing at specific altitudes on the multiplex mode portion of the

meteorological sounding. A number of intermediate altitudes were passed by at times during data collection due to the urgency of completing a sounding in a short period of time. These instances are denoted on the data table by the words "no data collected." In other instances, the Metro-Sonde's chart recorder failed to record the temperature at various altitudes. This situation is denoted by a "--" in the appropriate data space.

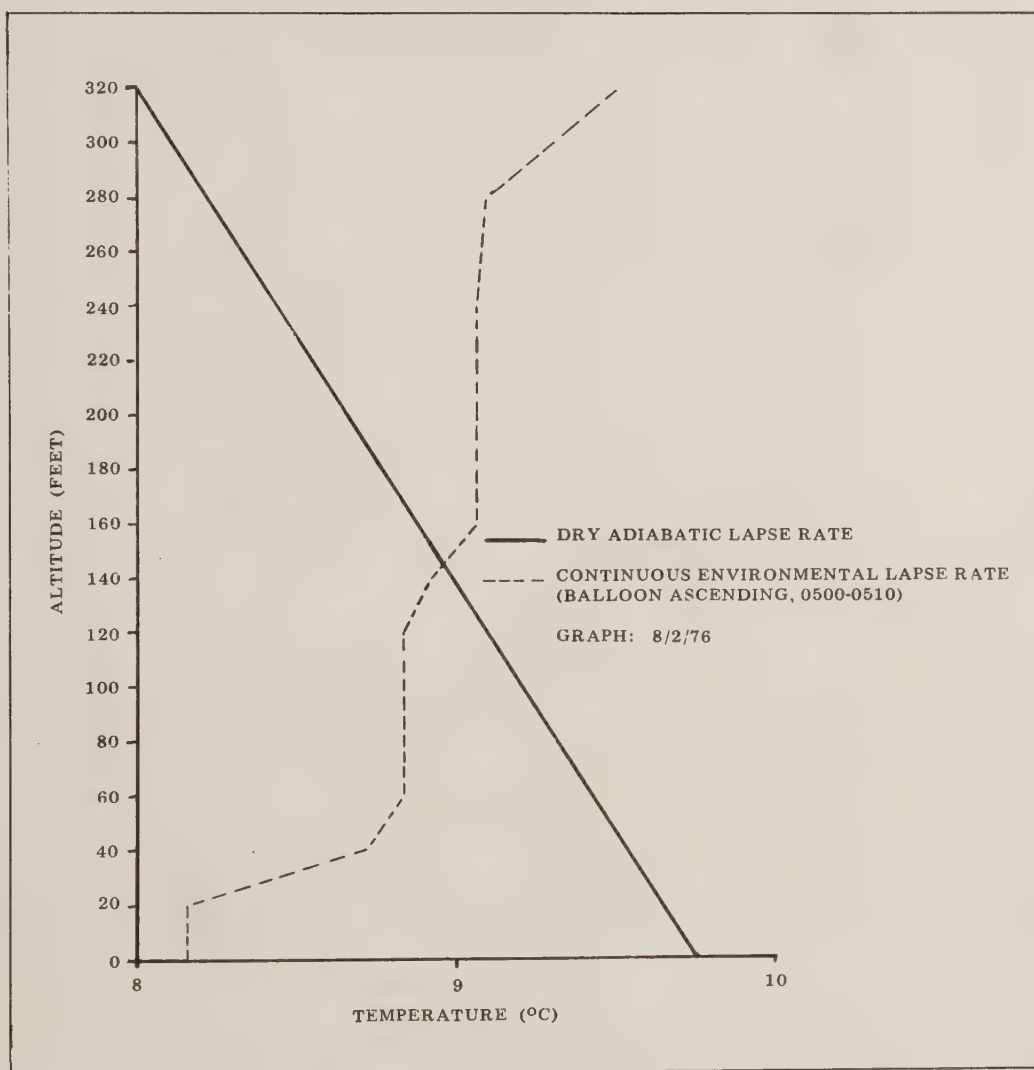


Figure 21.--Lapse rates for trial 1, plot 1 (Jimmy Creek) - 7/3/76 - Dylox; sounding 1.

Table 7.--Temperature data for trial 1, plot 1
(Jimmy Creek) - 7/3/76 - Dylox;
sounding 1

Continuous Temperature Profile, 0500-0510		
<u>Altitude</u> <u>(ft)</u>	<u>Temperature</u> <u>(°C)</u>	<u>Temperature</u> <u>(°F)</u>
Surface	8.16	46.69
20	8.16	46.69
40	8.72	47.70
60	8.83	47.90
80	8.83	47.90
100	8.83	47.90
120	8.83	47.90
140	8.94	48.01
160	9.06	48.30
200	9.06	48.30
240	9.06	48.30
280	9.11	48.40
320	9.50	49.11

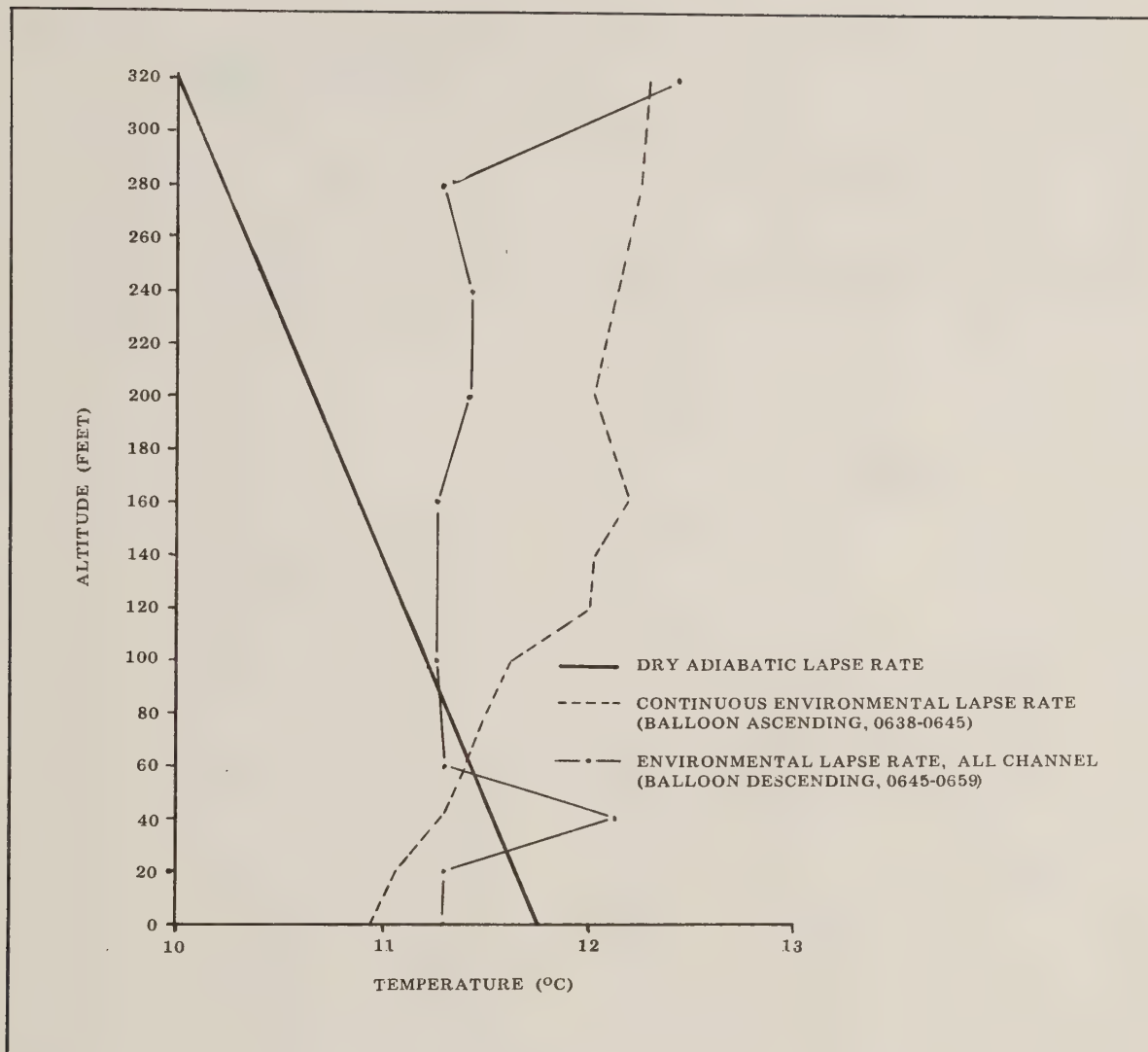


Figure 22.--Lapse rates for trial 1, plot 1 (Jimmy Creek) - 7/3/76 - Dylor; sounding 2.

Table 8.--Temperature data for trial 1, plot 1 (Jimmy Creek) - 7/3/76 -
Dylox; sounding 2

All Channel, 0645-0659			Continuous Temperature Profile, 0638-0645		
Altitude (ft)	Temperature (°C)	Temperature (°F)	Altitude (ft)	Temperature (°C)	Temperature (°F)
Surface	11.30	52.33	Surface	10.96	51.73
20	11.30	52.33	20	11.09	51.97
40	12.08	53.74	40	11.30	52.33
60	11.30	52.33	60	11.41	52.53
80	No data collected		80	11.52	52.74
100	11.25	52.25	100	11.63	52.94
120	No data collected		120	11.74	53.14
140	No data collected		140	11.97	53.54
160	11.25	52.25	160	12.19	53.94
200	11.41	52.53	200	11.97	53.54
240	11.41	52.53	240	12.08	53.74
320	12.41	54.35	320	12.30	54.15

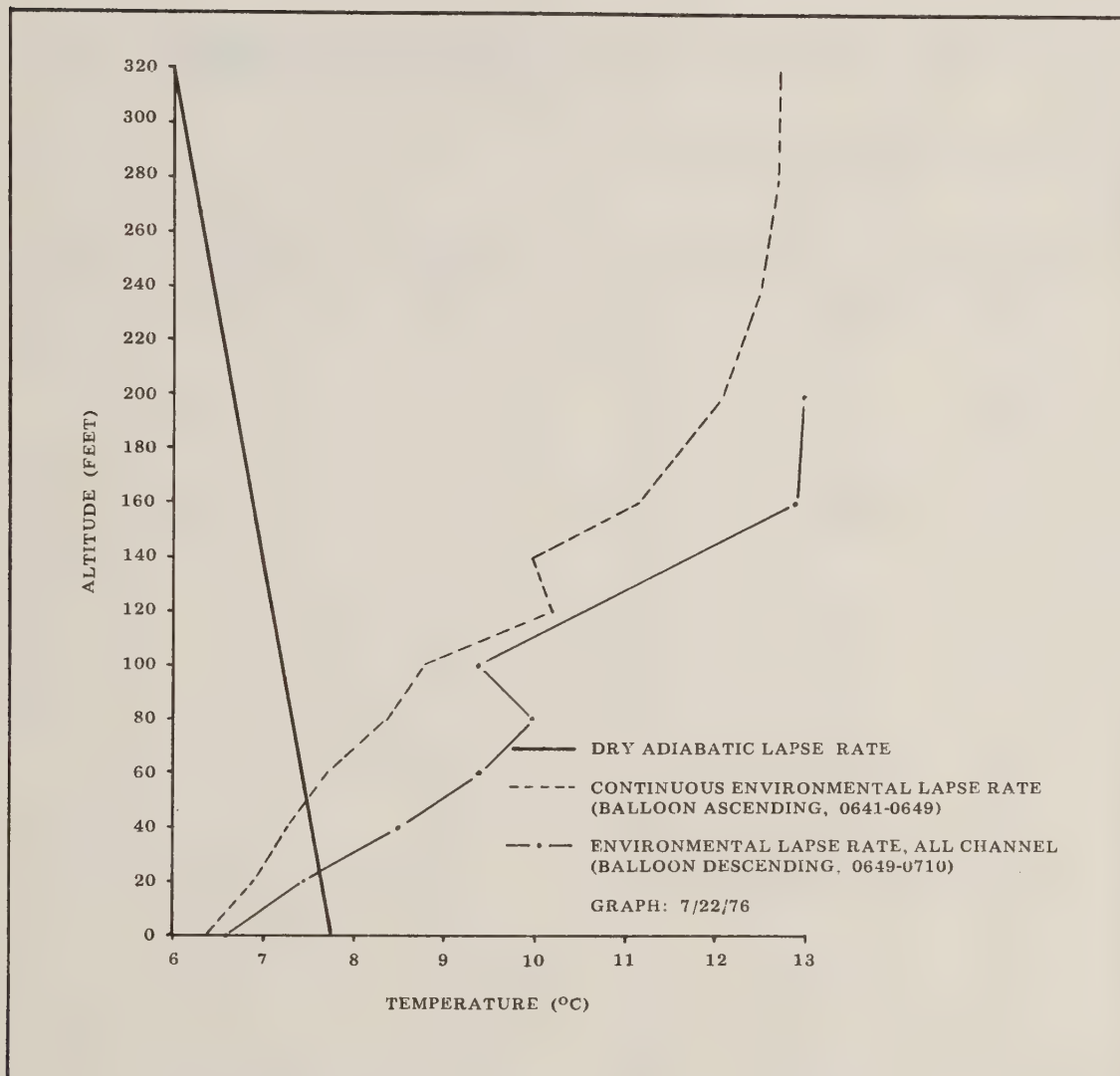


Figure 23.--Lapse rates for trial 2, plot 3 (East Fork Cabin Creek) - 7/5/76 - Orthene; sounding 1.

Table 9.--Temperature data for trial 2, plot 3 (East Fork Cabin Creek) -
7/5/76 - Orthene; sounding 1

All Channel, 0507-0528			Continuous Temperature Profile, 0500-0507		
Altitude (ft)	Temperature (°C)	Temperature (°F)	Altitude (ft)	Temperature (°C)	Temperature (°F)
Surface	6.59	43.86	Surface	6.37	43.46
20	7.48	45.47	20	6.93	44.47
40	8.50	47.29	40	7.26	45.07
60	9.39	48.90	60	7.71	45.88
80	9.95	49.91	80	8.38	47.09
100	9.39	48.90	100	8.79	47.82
120	No data collected		120	10.18	50.32
140	No data collected		140	9.96	49.93
160	12.86	55.15	160	11.13	52.03
200	12.98	55.36	200	12.08	53.74
240	--	--	240	12.42	54.35
280	--	--	280	12.64	54.75
320	12.75	54.95	320	12.64	54.75

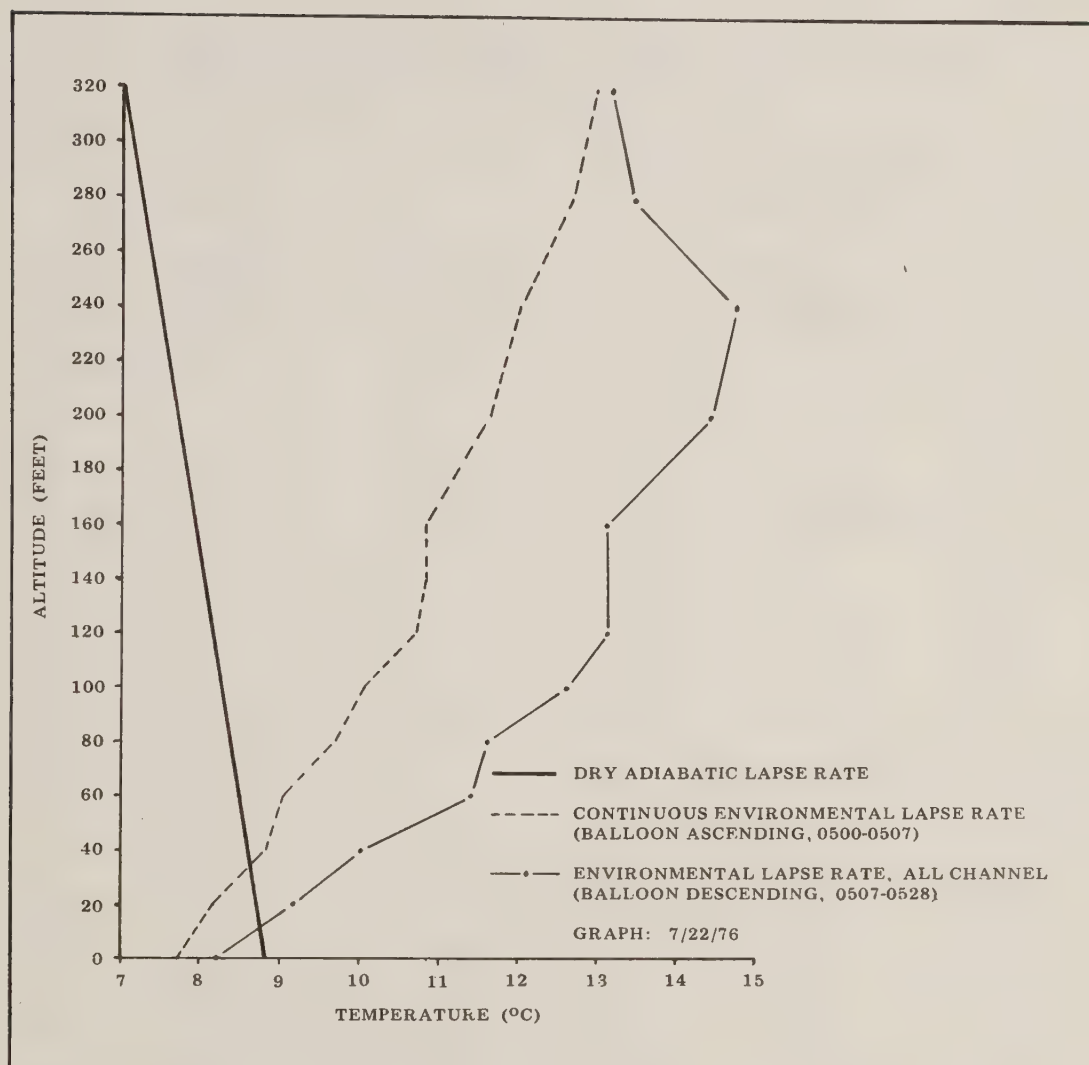


Figure 24.--Lapse rates for trial 2, plot 3 (East Fork Cabin Creek) - 7/5/76 - Orthene; sounding 2.

Table 10.--Temperature data for trial 2, plot 3 (East Fork Cabin
Creek) - 7/5/76 - Orthene; sounding 2

All Channel, 0649-0710			Continuous Temperature Profile, 0641-0649		
Altitude (ft)	Temperature (°C)	Temperature (°F)	Altitude (ft)	Temperature (°C)	Temperature (°F)
Surface	8.16	46.69	Surface	7.71	45.88
20	9.17	48.50	20	8.16	46.69
40	10.06	50.11	40	8.83	47.90
60	11.41	52.53	60	9.06	48.30
80	11.63	52.94	80	9.73	49.51
100	12.59	54.67	100	10.18	50.32
120	13.09	55.56	120	10.74	51.32
140	No data collected		140	10.85	51.53
160	13.09	55.56	160	10.85	51.53
200	14.37	57.88	200	11.63	52.94
240	14.71	58.48	240	12.03	54.15
280	13.48	56.26	280	12.64	54.75
320	13.20	55.76	320	12.98	55.36

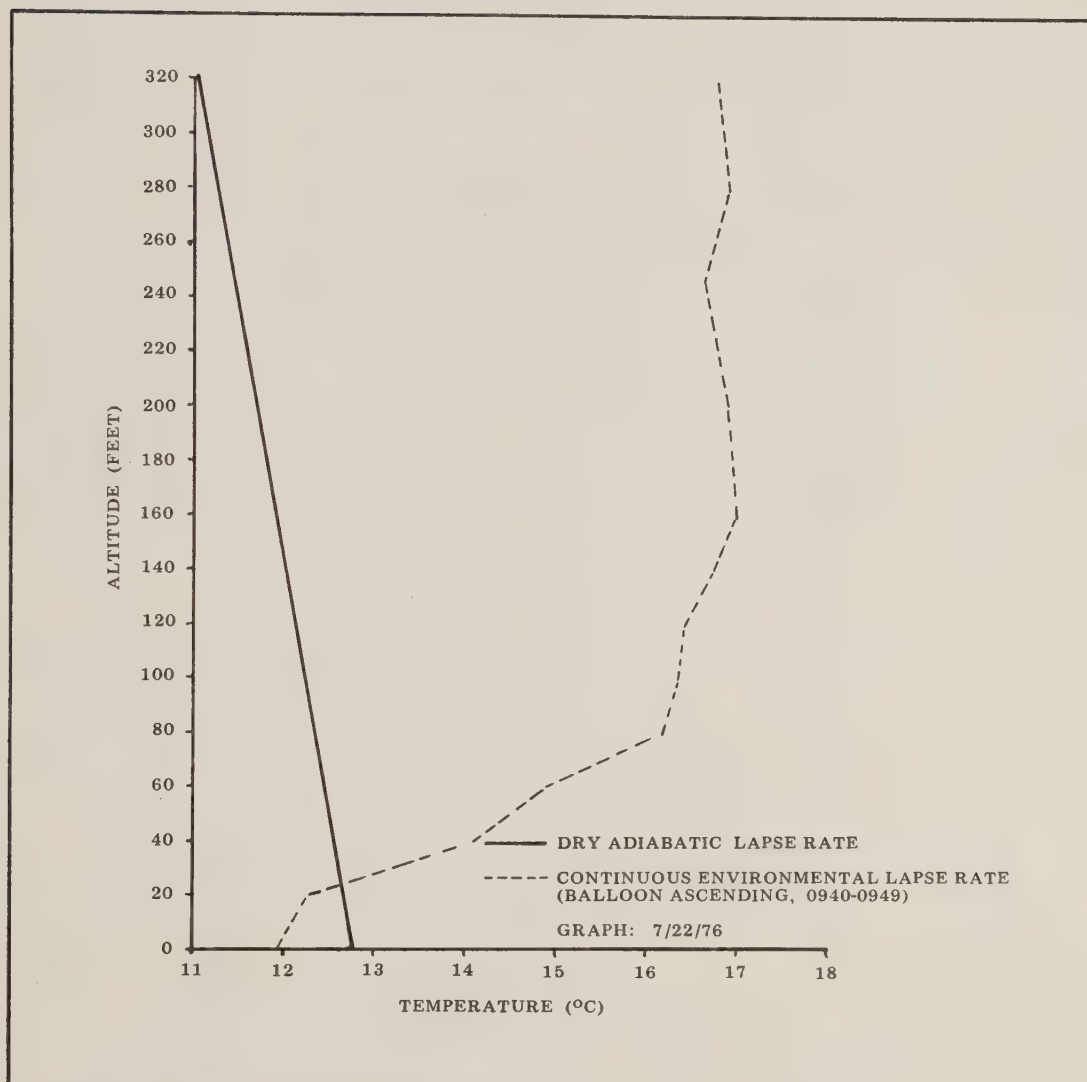


Figure 25.--Lapse rates for trial 2, plot 3 (East Fork Cabin Creek) - 7/5/76 - Orthene; sounding 3.

Table 11.--Temperature data for trial 2, plot 3
(East Fork Cabin Creek) - 7/5/76 -
Orthene; sounding 3

Continuous Temperature Profile, 0940-0949		
<u>Altitude</u> <u>(ft)</u>	<u>Temperature</u> <u>(°C)</u>	<u>Temperature</u> <u>(°F)</u>
Surface	11.97	53.54
20	12.30	54.15
40	14.10	57.38
60	14.88	58.78
80	16.22	61.20
100	16.34	61.40
120	16.45	61.61
140	16.73	62.11
160	17.01	62.61
200	16.90	62.41
240	16.63	61.93
280	16.90	62.41
320	16.78	62.21

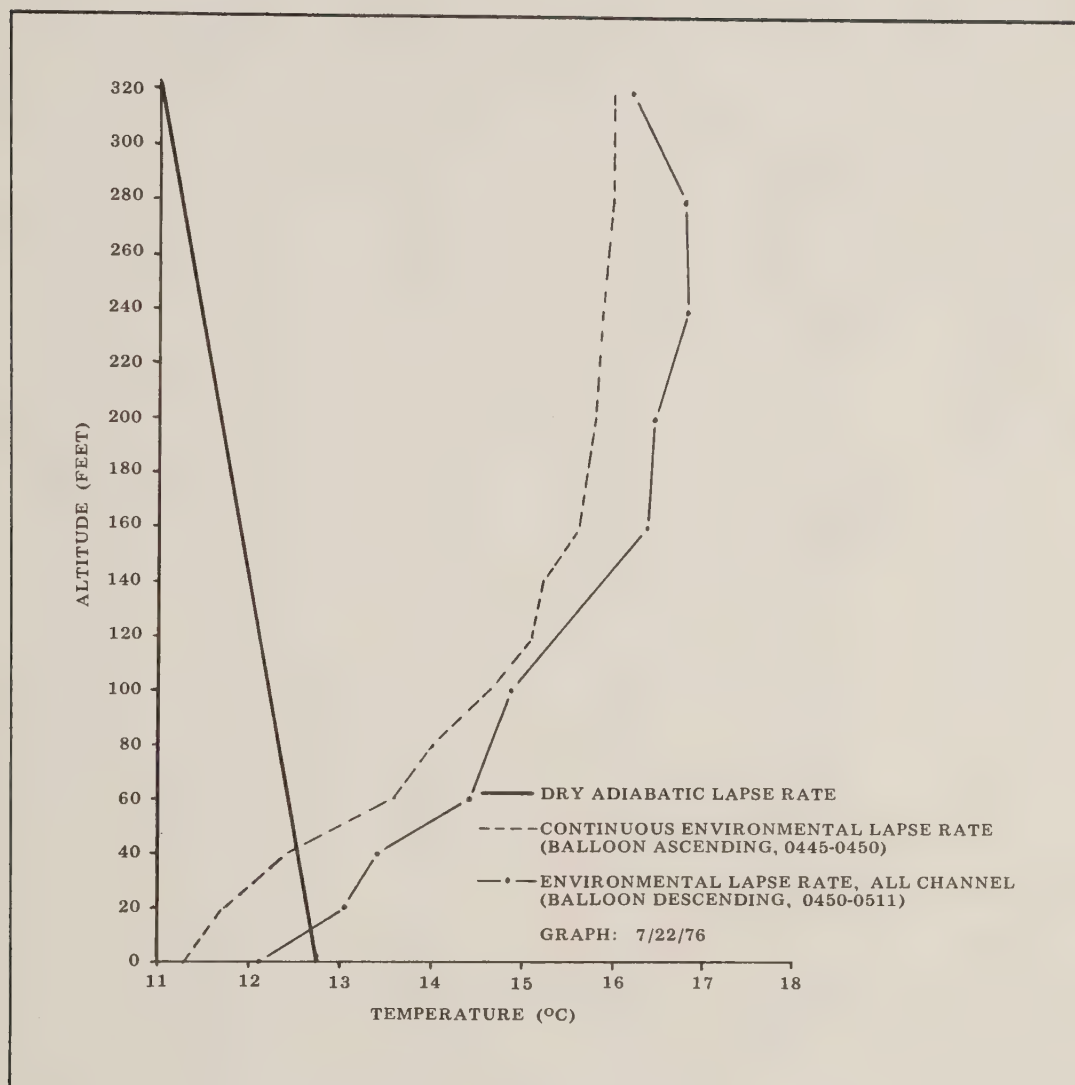


Figure 26.--Lapse rates for trial 3, plot 5 (Holloway Gulch) - 7/6/76 - Orthene; sounding 1.

Table 12.--Temperature data for trial 3, plot 5 (Holloway Gulch) -
7/6/76 - Orthene; sounding 1

All Channel, 0450-0511			Continuous Temperature Profile, 0445-0450		
Altitude (ft)	Temperature (°C)	Temperature (°F)	Altitude (ft)	Temperature (°C)	Temperature (°F)
Surface	12.08	53.74	Surface	11.30	52.33
20	13.09	55.56	20	11.74	53.14
40	13.42	56.16	40	12.42	54.34
60	14.43	57.98	60	13.59	56.46
80	14.88	58.78	80	13.98	57.17
100	14.88	58.78	100	14.66	58.38
120	No data collected		120	15.10	59.19
140	No data collected		140	15.22	59.39
160	16.34	61.40	160	15.61	60.09
200	16.45	61.61	200	15.78	60.40
240	16.78	62.21	240	15.78	60.40
280	16.78	62.21	280	16.00	60.80
320	16.22	61.20	320	16.00	60.80

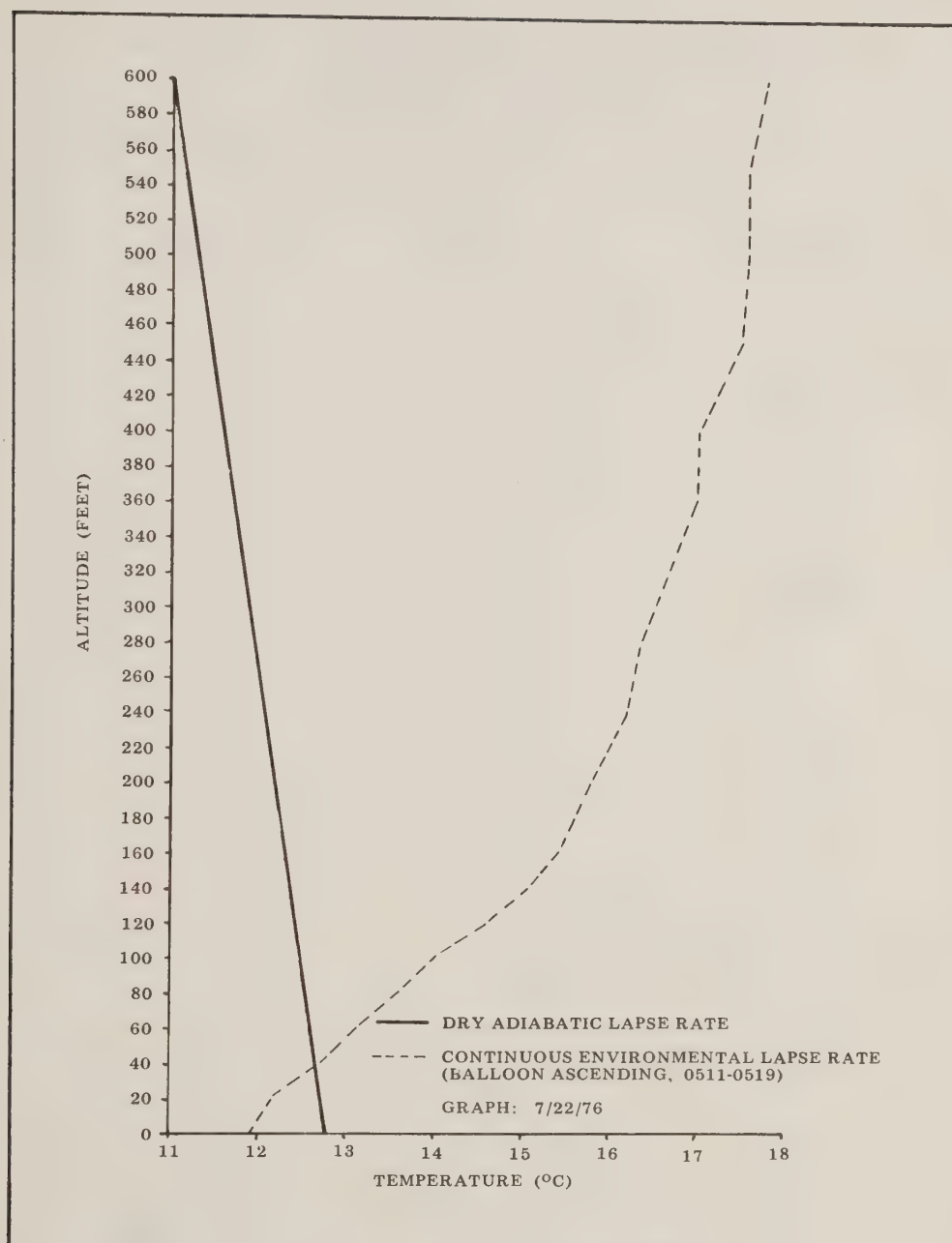


Figure 27.--Lapse rates for trial 3, plot 5 (Holloway Gulch) - 7/6/76 - Orthene; sounding 1, temperature profile 2.

Table 13.--Temperature data for trial 3, plot 5
(Holloway Gulch) - 7/6/76 - Orthene;
sounding 1, temperature profile 2

Continuous Temperature Profile, 0511-0519		
<u>Altitude</u> <u>(ft)</u>	<u>Temperature</u> <u>(°C)</u>	<u>Temperature</u> <u>(°F)</u>
Surface	11.96	53.54
20	12.19	53.94
40	12.75	54.95
60	13.14	55.66
80	13.59	56.46
100	14.04	57.27
120	14.66	58.38
140	15.10	59.19
160	15.44	59.79
200	15.78	60.40
240	16.22	61.20
280	16.34	61.40
320	16.67	62.01
360	16.95	62.51
400	17.03	62.65
450	17.46	63.42
500	17.57	63.63
550	17.57	63.63
600	17.79	64.02

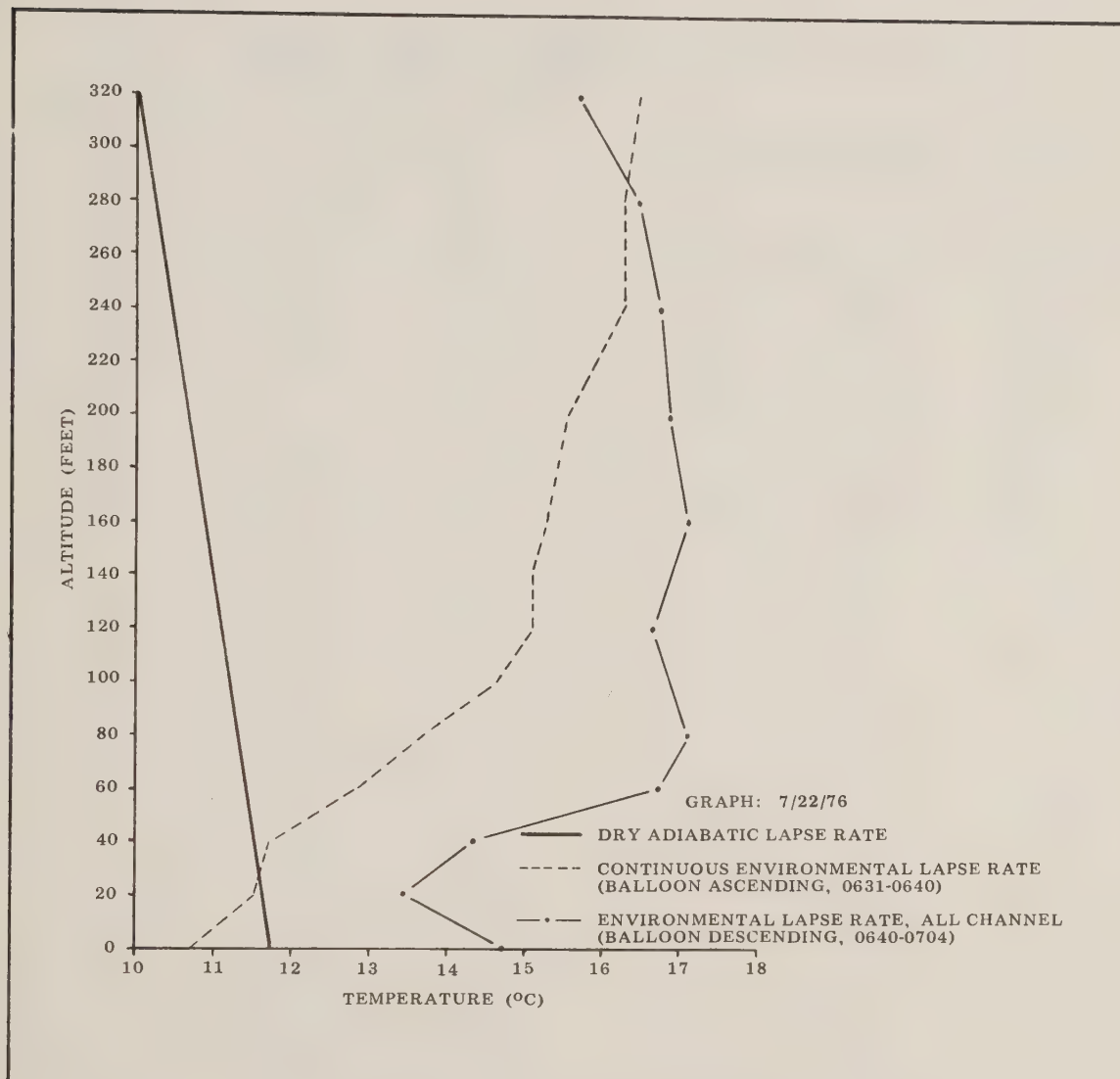


Figure 28.--Lapse rates for trial 3, plot 5 (Holloway Gulch) - 7/6/76 - Orthene; sounding 2.

Table 14.--Temperature data for trial 3, plot 5 (Holloway Gulch) -
7/6/76 - Orthene; sounding 2

All Channel, 0640-0704			Continuous Temperature Profile, 0631-0640		
Altitude (ft)	Temperature (°C)	Temperature (°F)	Altitude (ft)	Temperature (°C)	Temperature (°F)
Surface	14.76	58.58	Surface	10.74	51.32
20	13.42	56.16	20	11.30	52.33
40	14.32	57.78	40	11.74	53.14
60	16.73	62.71	60	12.86	55.15
80	17.01	62.61	80	13.70	56.67
100	No data collected		100	14.66	58.38
120	16.73	62.11	120	15.10	59.19
140	No data collected		140	15.10	59.19
160	17.06	62.71	160	15.27	59.49
200	16.90	62.41	200	15.55	59.99
240	16.73	62.11	240	16.22	61.20
280	16.45	61.61	280	16.22	61.20
320	15.66	60.19	320	16.45	61.61

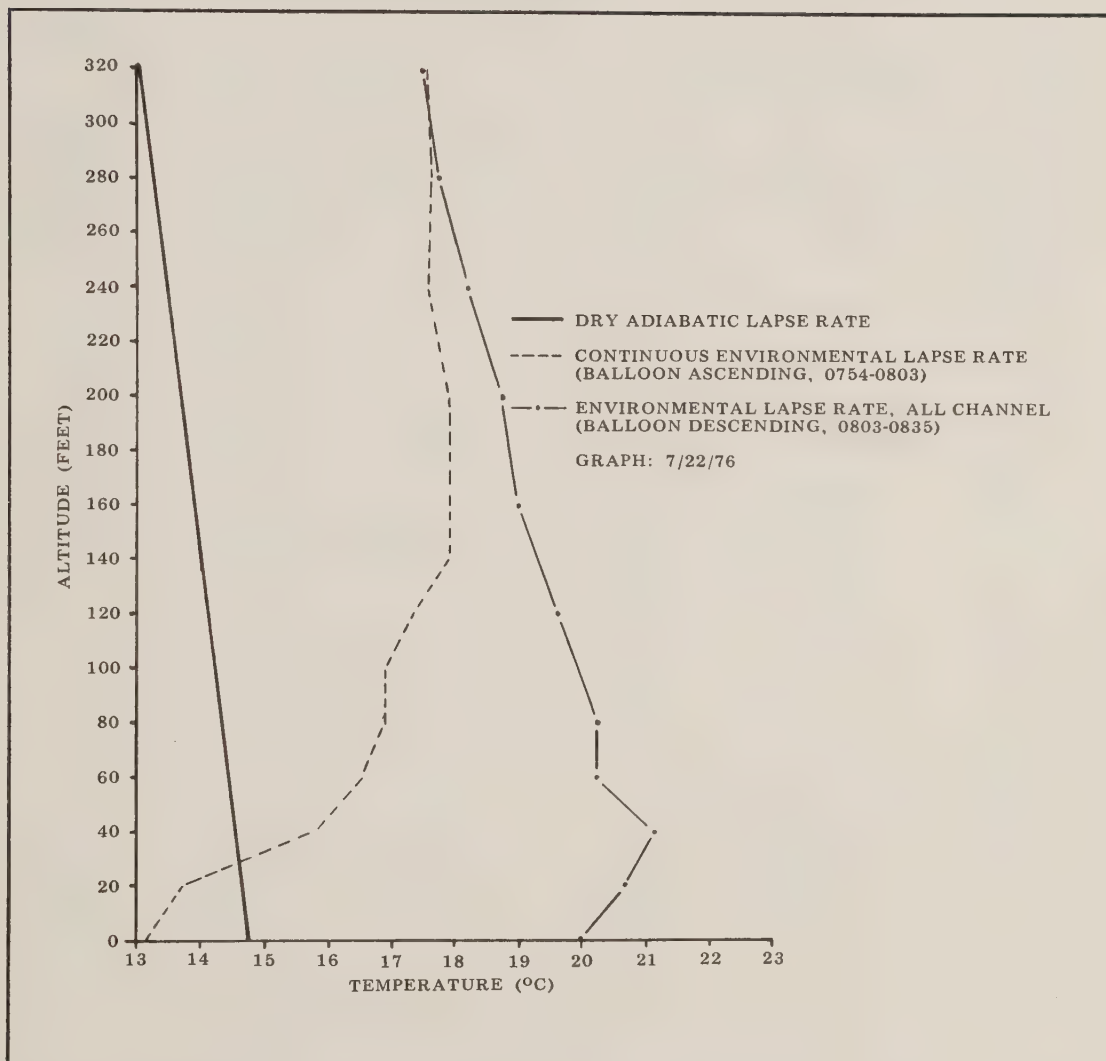


Figure 29.--Lapse rates for trial 3, plot 5 (Holloway Gulch) - 7/6/76 - Orthene; sounding 3.

Table 15.--Temperature data for trial 3, plot 5 (Holloway Gulch) -
7/6/76 - Orthene; sounding 3

All Channel, 0803-0835			Continuous Temperature Profile, 0754-0803		
Altitude (ft)	Temperature (°C)	Temperature (°F)	Altitude (ft)	Temperature (°C)	Temperature (°F)
Surface	19.92	67.86	Surface	13.01	55.42
20	20.93	69.67	20	13.76	56.77
40	21.15	70.07	40	15.78	60.40
60	20.26	68.46	60	16.22	61.20
80	20.26	68.46	80	16.90	62.41
100	No data collected		100	16.90	62.41
120	19.64	67.35	120	17.34	63.22
140	No data collected		140	17.75	63.94
160	19.02	66.24	160	17.75	63.94
200	18.74	65.74	200	17.75	63.94
240	18.18	64.73	240	17.62	63.72
280	17.79	64.02	280	17.68	63.82
320	17.46	63.42	320	17.57	63.62

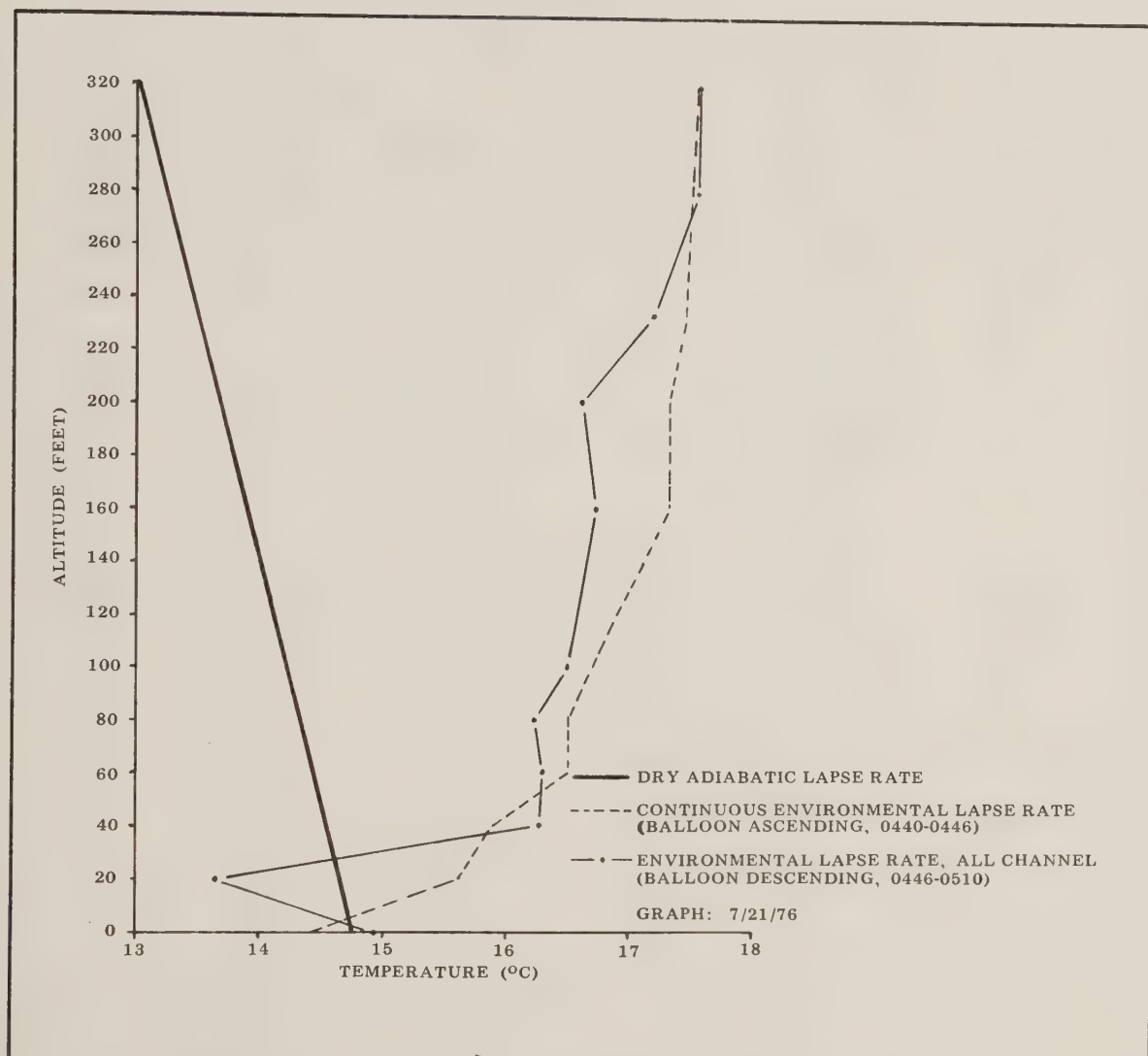


Figure 30.--Lapse rates for trial 4, plot 2 (Sulphur Bar Creek) -
 7/7/76 - Dyllox; sounding 1.

Table 16.--Temperature data for trial 4, plot 2 (Sulphur Bar Creek) -
7/7/76 - Dylox; sounding 1

All Channel, 0446-0510			Continuous Temperature Profile, 0440-0446		
Altitude (ft)	Temperature (°C)	Temperature (°F)	Altitude (ft)	Temperature (°C)	Temperature (°F)
Surface	14.88	58.78	Surface	14.43	57.98
20	13.65	56.57	20	15.61	60.09
40	16.28	61.30	40	15.89	60.60
60	16.39	61.51	60	16.50	61.71
80	16.28	61.30	80	16.50	61.71
100	16.50	61.71	100	16.67	62.01
120	No data collected		120	16.90	62.41
140	No data collected		140	17.12	62.82
160	16.78	62.21	160	17.34	63.22
200	16.62	61.91	200	17.34	63.22
240	17.18	62.92	240	17.46	63.42
280	17.57	63.62	280	17.51	63.52
320	17.57	63.62	320	17.51	63.52

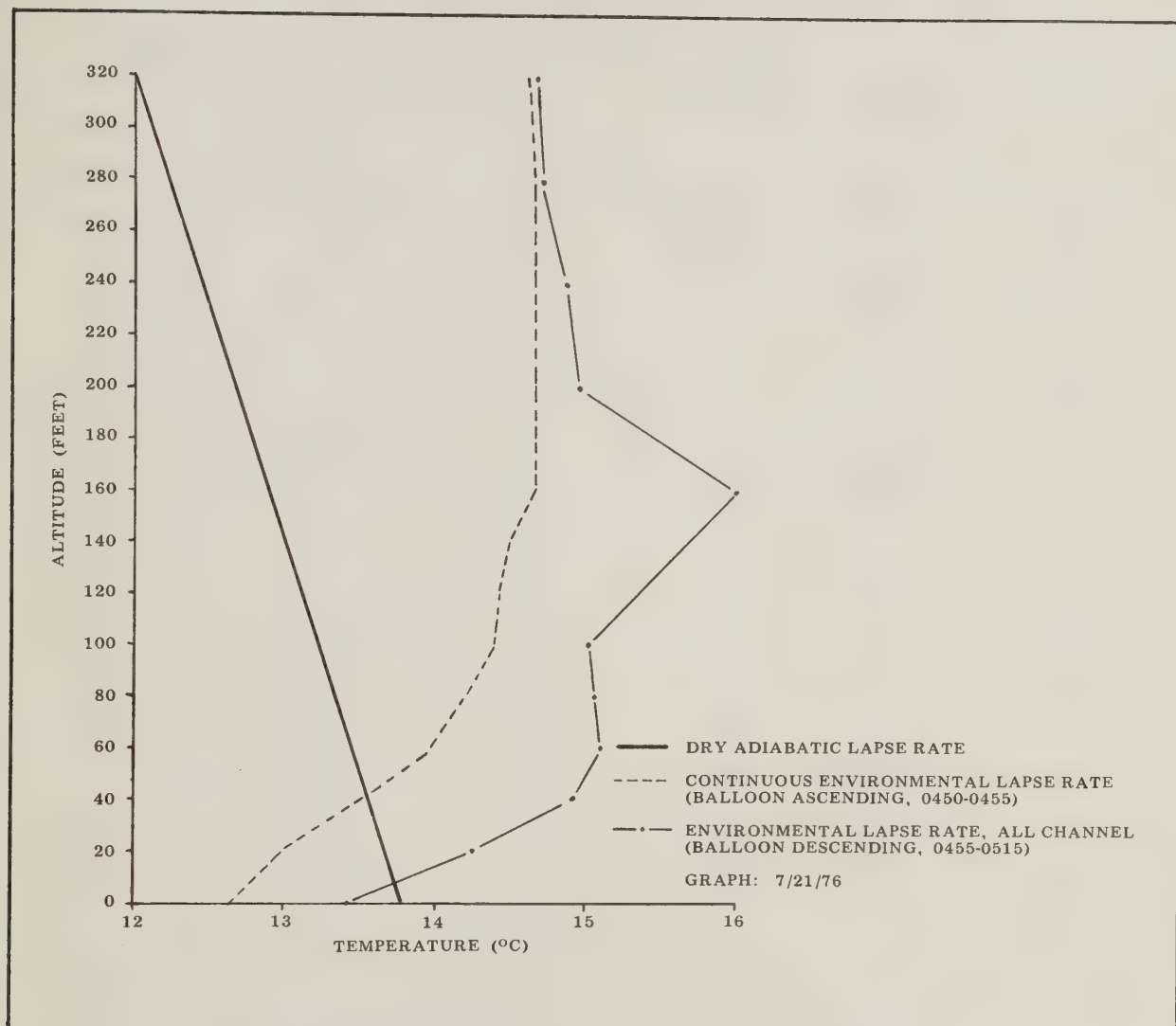


Figure 31.--Lapse rates for trial 5, plot 7 (Vermont Gulch) - 7/8/76 - Dylox; sounding 1.

Table 17.--Temperature data for trial 5, plot 7 (Vermont Gulch) -
7/8/76 - Dylox; sounding 1

All Channel, 0455-0515			Continuous Temperature Profile, 0450-0455		
Altitude (ft)	Temperature (°C)	Temperature (°F)	Altitude (ft)	Temperature (°C)	Temperature (°F)
Surface	13.42	56.16	Surface	12.64	54.75
20	14.26	57.67	20	13.01	55.42
40	14.94	58.88	40	13.54	56.37
60	15.10	59.19	60	13.98	57.17
80	14.99	58.98	80	14.21	57.57
100	14.95	58.92	100	14.38	57.88
120	No data collected		120	14.43	57.98
140	No data collected		140	14.49	58.01
160	16.00	60.80	160	14.66	58.38
200	14.94	58.88	200	14.66	58.38
240	14.88	58.78	240	14.66	58.38
280	14.68	58.42	280	14.66	58.38
320	14.66	58.38	320	14.60	58.28

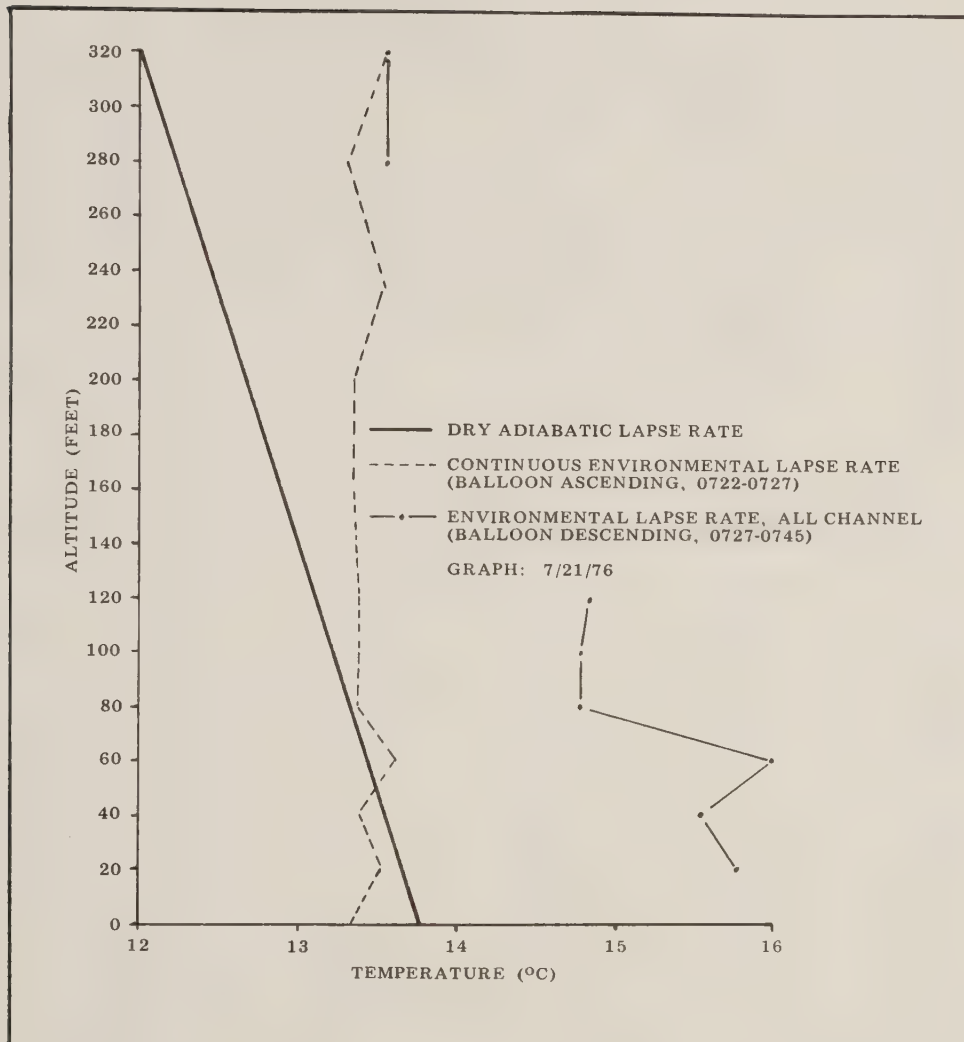


Figure 32.--Lapse rates for trial 5, plot 7 (Vermont Gulch) - 7/8/76 - Dylor; sounding 2.

Table 18.--Temperature data for trial 5, plot 7 (Vermont Gulch) -
7/8/76 - Dylox; sounding 2

All Channel, 0727-0745			Continuous Temperature Profile, 0722-0727		
Altitude (ft)	Temperature (°C)	Temperature (°F)	Altitude (ft)	Temperature (°C)	Temperature (°F)
Surface	*No data collected		Surface	13.31	55.96
20	15.78	60.40	20	13.54	56.36
40	15.55	59.99	40	13.42	56.16
60	16.00	60.80	60	13.59	56.46
80	14.77	58.58	80	13.42	56.16
100	14.77	58.58	100	13.42	56.16
120	14.82	58.68	120	13.42	56.16
140	No data collected		140	13.37	56.06
160	--	--	160	13.37	56.06
200	14.32	57.78	200	13.37	56.06
240	--	--	240	13.54	56.36
280	13.54	56.36	280	13.26	55.86
320	13.54	56.36	320	13.54	56.36

* Gusty surface winds
 -- No temperature data delivered on chart

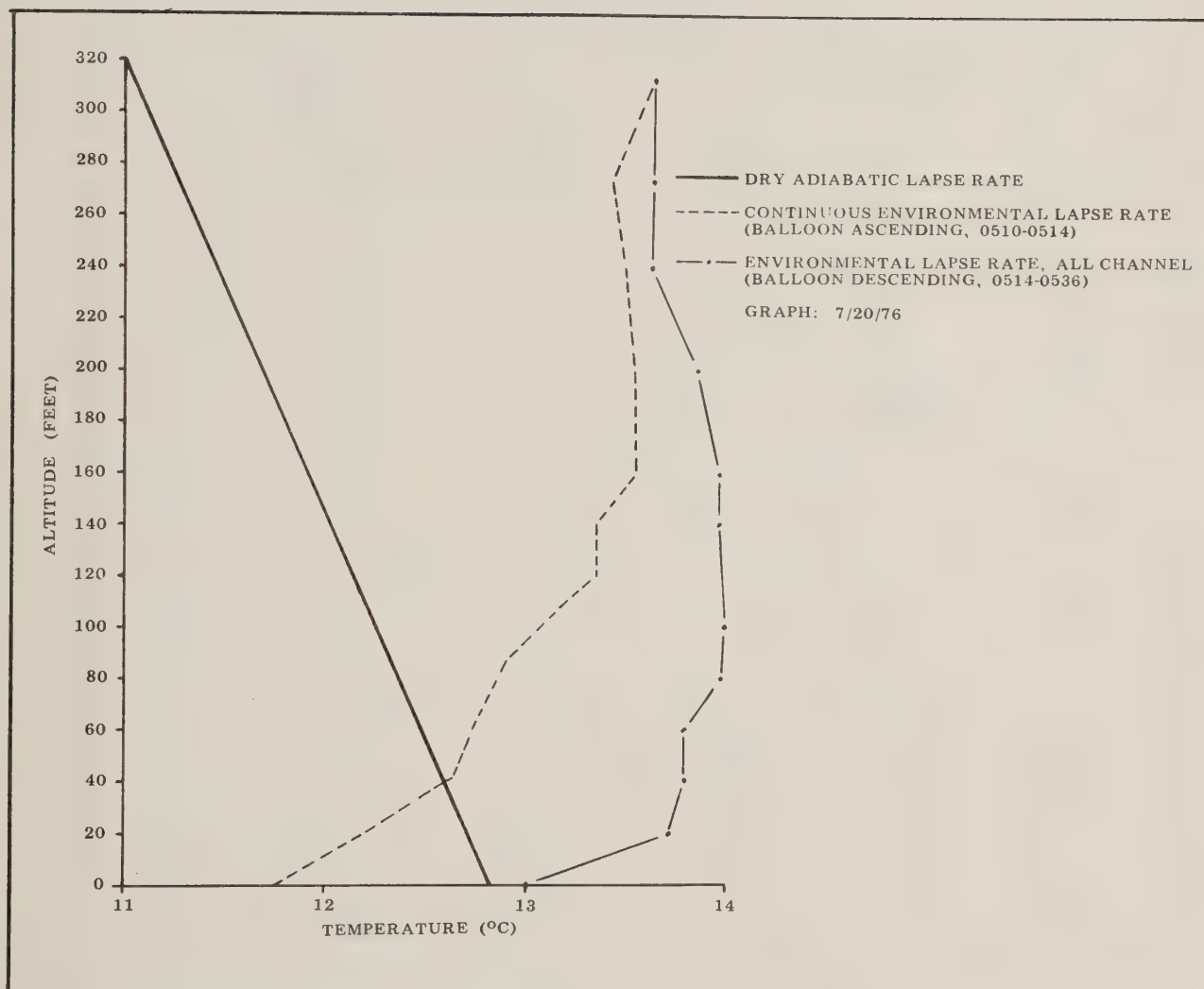


Figure 33.--Lapse rates for trial 6, plot 8 (Spring Creek) - 7/9/76 - Orthene; sounding 1.

Table 19.--Temperature data for trial 6, plot 8 (Spring Creek) - 7/9/76 -
Orthene; sounding 1

All Channel, 0514-0536			Continuous Temperature Profile, 0510-0514		
Altitude (ft)	Temperature (°C)	Temperature (°F)	Altitude (ft)	Temperature (°C)	Temperature (°F)
Surface	12.58	54.64	Surface	11.74	53.13
20	13.72	56.69	20	12.30	54.15
40	13.82	56.87	40	12.58	54.65
60	13.82	56.87	60	12.75	54.95
80	13.98	57.17	80	12.86	55.15
100	14.04	57.27	100	13.14	55.66
120	No data collected		120	13.37	56.06
140	13.93	57.07	140	13.37	56.06
160	13.93	57.07	160	13.54	56.36
200	13.82	56.87	200	13.54	56.36
240	13.59	56.47	240	13.49	56.28
280	13.65	56.57	280	13.42	56.16
320	13.65	56.57	320	13.65	56.57

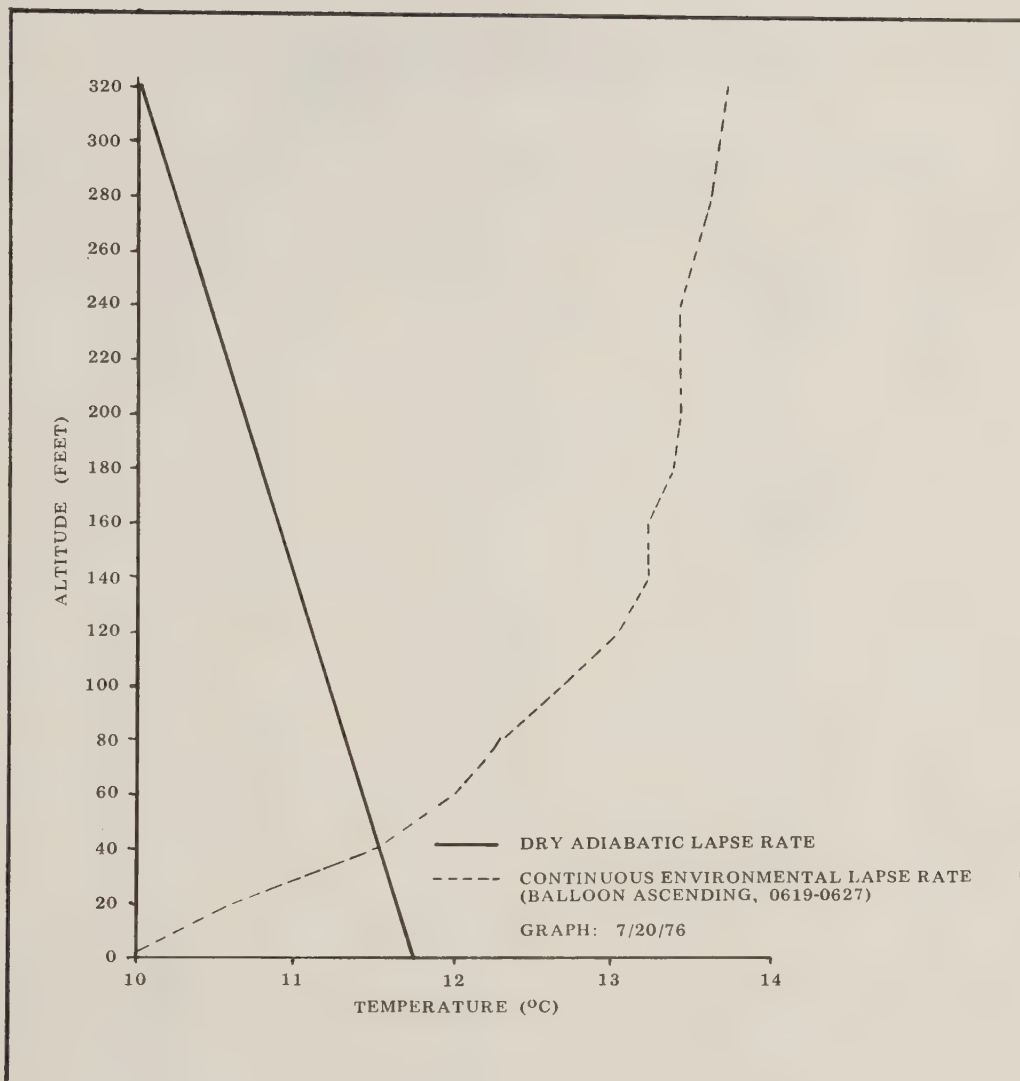


Figure 34.--Lapse rates for trial 6, plot 8 (Spring Creek) - 7/9/76 - Orthene; sounding 2.

Table 20.--Temperature data for trial 6, plot 8
(Spring Creek) - 7/9/76 - Orthene;
sounding 2

Continuous Temperature Profile, 0619-0627		
<u>Altitude</u> <u>(ft)</u>	<u>Temperature</u> <u>(°C)</u>	<u>Temperature</u> <u>(°F)</u>
Surface	9.95	49.91
20	10.62	51.12
40	11.52	52.74
60	11.97	53.54
80	12.30	54.15
100	12.66	54.79
120	12.98	55.36
140	13.18	55.72
160	13.18	55.72
180	13.31	55.96
200	13.42	56.16
240	13.42	56.16
280	13.60	56.48
320	13.76	56.77

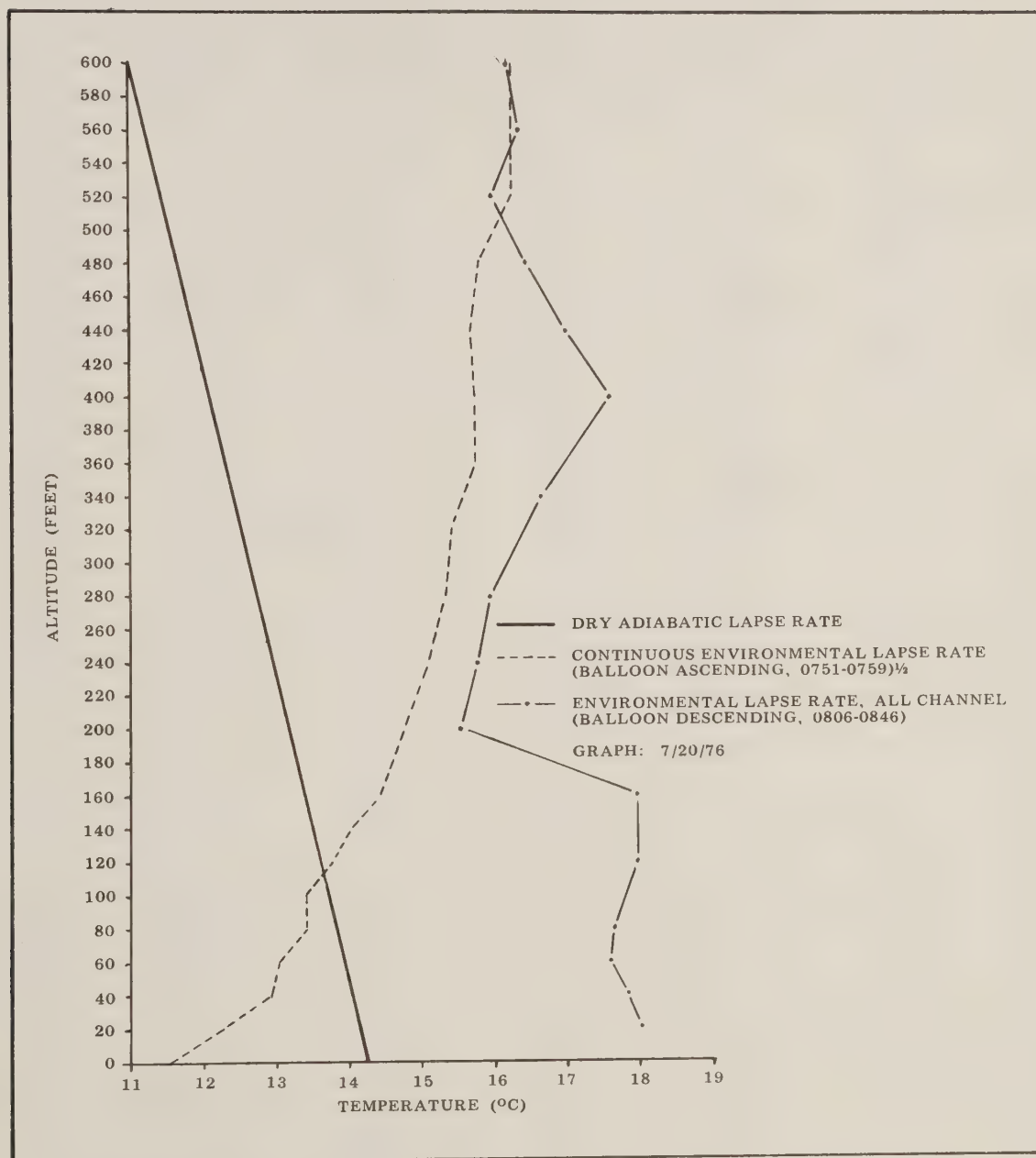


Figure 35.--Lapse rates for trial 6, plot 8 (Spring Creek) - 7/9/76 - Orthene; sounding 3.

Table 21.--Temperature data for trial 6, plot 8 (Spring Creek) - 7/9/76 -
Orthene; sounding 3

All Channel, 0806-0846			Continuous Temperature Profile, 0751-0759		
Altitude (ft)	Temperature (°C)	Temperature (°F)	Altitude (ft)	Temperature (°C)	Temperature (°F)
Surface	*No data collected		Surface	11.52	52.74
20	18.06	64.43	20	12.32	54.19
40	17.85	64.13	40	12.98	55.36
60	17.57	63.62	60	13.03	55.46
80	17.63	63.72	80	13.48	55.26
100	18.69	65.64	100	13.48	56.26
120	18.01	64.43	120	13.76	56.77
140	No data collected		140	14.10	57.37
160	18.02	64.43	160	14.43	57.98
200	15.56	60.19	200	14.77	58.58
240	15.78	60.40	240	15.10	59.19
280	15.72	60.30	280	15.33	59.59
320	15.83	60.50	320	15.44	59.79
340	16.67	62.01	360	15.78	60.40
360	16.22	61.20	400	15.78	60.40
400	17.58	63.62	440	15.72	60.30
440	17.01	62.61	480	15.83	60.50
480	16.45	61.61	520	16.22	61.20
520	16.00	60.80	560	16.22	61.20
560	16.37	61.40	600	16.22	61.20
600	16.22	61.20			
*Gusty surface winds					

WIND DIRECTION DATA

The following wind direction data, which are recorded in tabular form, were collected through observing the Metro-Sonde's tethered balloon during its flights throughout the course of

spray periods. The wind directions were recorded during meteorological soundings by employees on the ground observing the orientation of the tethered balloon at different altitudes. The balloon always flies nose into the wind.

Wind Direction Data

Trial 1, Plot 1 - 7/3/76
Sounding 1, 0500-0522

Height (ft)	Wind direction (°)	
	(0500)	(0522)
Surface	270	225
20	270	225
40	270	225
60	270	225
80	225	200
100	225	200
120	225	--
140	270	--
160	270	225
200	180	225
240	180	270
280	225	270
320	225	225

Trial 1, Plot 1 - 7/3/76
Sounding 2, 0645-0650

Height (ft)	Wind direction (°)	
	(0645)	(0650)
Surface	280	180
20	280	200
40	225	180
60	225	270
80	225	270
100	225	270
120	200	--
140	200	--
160	180	200
200	240	200
240	200	270
280	200	270
320	225	225

Trial 2, Plot 3 - 7/5/76
Sounding 1, 0500-0528

Height (ft)	Wind direction (°)	
	(0500)	(0528)
Surface	20	0
20	15	50
40	15	0
60	0	20
80	0	0
100	0	90
120	10	--
140	45	--
160	45	0
200	60	90
240	90	90
280	90	90
320	90	90

Trial 2, Plot 3 - 7/5/76
Sounding 2, 0641-0714

Height (ft)	Wind direction (°)	
	(0641)	(0714)
Surface	20	0
20	20	0
40	0	0
60	0	0
80	0	0
100	0	270 <u>v</u>
120	315	0 <u>v</u>
140	315	--
160	0	270 <u>v</u>
200	300	270
240	270	240
280	270	260
320	270	260

v = variable

Trial 2, Plot 3 - 7/5/76
Sounding 3, 0840-0950

Height (ft)	Wind direction (°)		
	(0840)	(0950)	
Surface	170	140	
20	170	140	
40	180	180	
60	100)
80	170)
100	210 <u>v</u>)
120	180)
140	135)
160	135)
200	135	190	
240	160	190	
280	105	190	
320	170	170	

Sonde Unit Battery Failure - 0928-0945

Trial 3, Plot 5 - 7/6/76
Sounding 1, 0445-0511

Height (ft)	Wind direction (°)	
	(0445)	(0511)
Surface	320	0
20	320	0
40	320	0
60	340	115
80	0	110
100	0	0
120	0	--
140	345	--
160	345	0
200	0	0
240	0	0
280	0	0
320	0	0

Trial 3, Plot 5 - 7/6/76
Sounding 2, 0511-0519

Height (ft)	Wind direction (°)	
	(0511)	(0519)
Surface		0
20		0
40		40
60		40
80		40
100		20
120		0
140		0
160		0
200		0
240		0
280		0
320		0
350		0
400		0
450		0
500		0
550		0
600		0

v = variable

Trial 3, Plot 5 - 7/6/76
Sounding 3, 0631-0700

Height (ft)	Wind direction (°)	
	(0631)	(0700)
Surface	40	0
20	80	0
40	45	50
60	20	30
80	0	30
100	0	--
120	0	45
140	0	--
160	0	10
200	20	10
240	10	40
280	20	30
320	100	35

Trial 3, Plot 5 - 7/6/76
Sounding 4, 0754-0835

Height (ft)	Wind direction (°)	
	(0754)	(0835)
Surface	90	200
20	110	120
40	130	180
60	130	180
80	90	160
100	75	--
120	90	110
140	110	--
160	100	110
200	110	110
240	110	110
280	90	120
320	165	100

Trial 4, Plot 2 - 7/7/76
Sounding 1, 0440-0510

Height (ft)	Wind direction (°)	
	(0440)	(0510)
Surface	180	40
20	180	40
40	180	40
60	180	30
80	180	35
100	120	25
120	120	--
140	120	--
160	120	40
200	180	30
240	120	120
280	120	120
320	120	120

Trial 5, Plot 7 - 7/8/76
Sounding 1, 0450-0515

Height (ft)	Wind direction (°)	
	(0450)	(0515)
Surface	215	260
20	215	200
40	215	200
60	220	190
80	220	215
100	220	215
120	220	--
140	215	--
160	215	215
200	215	215
240	215	215
280	215	215
320	215	215

Trial 5, Plot 7 - 7/8/76
Sounding 2, 0722-0745

Height (ft)	Wind direction (°)	
	(0722)	(0745)
Surface	270	180 <u>v</u>
20	270	180 <u>v</u>
40	270	180 <u>v</u>
60	180	165 <u>g</u>
80	235	190
100	235	180
120	250	--
140	235	260
160	215	180
200	190	190
240	210	200
280	235	235
320	235	235

Trial 6, Plot 8 - 7/9/76
Sounding 1, 0510-0536

Height (ft)	Wind direction (°)	
	(0510)	(0536)
Surface	270	270
20	270	270
40	270	270
60	270	270
80	270	270
100	270	270
120	270	270
140	270	270
160	270	270
200	215	0
240	305	180
280	180	90
320	125	0

Trial 6, Plot 8 - 7/9/76
Sounding 2, 0619-0627

Height (ft)	Wind direction (°)	
	(0619)	(0627)
Surface	270	
20	270	
40	270	
60	270	
80	270	
100	270	
120	270	
140	270	
160	270	
180	0	
200	0	
240	180	
280	90	
320	0	

Trial 6, Plot 8 - 7/9/76
Sounding 3, 0751-0846

Height (ft)	Wind direction (°)	
	(0751)	(0846)
Surface	25	90
20	0	100
40	0	90
60	0	90
100	0	270
120	0	270
140	0	--
160	0	100
200	0	95
240	0	85
280	0	195
320	0	340
360	345	225
400	350	270
440	270	270
480	260	225
520	270	270
560	270	270
600	270	270

v = variable
g = gusty

ADDITIONAL SURFACE WIND DATA

In addition to the surface wind data provided for the period of actual insecticide aerial application, the wind data in this section include surface wind direction and speed recorded by each of the two-meter wind sets used on each spray plot (tables 22-29). These data supply a broader scope of information concerning local wind conditions on each spray plot at

and preceding aerial application. Data irregularities include not using the Climatronics wind set during and preceding insecticide application on spray trial 1. In addition, the lack of wind direction data for the Beckman and Whitney wind set on spray trial 5 (7/8/76) resulted because employees failed to turn on the instrument's windspeed recorder until 0613 on July 8.

Table 22.--Wind data for trial 1, plot 1 (Jimmy Creek) -
7/3/76 - Dylox

Ground Instrument: Beckman and Whitney 1755 (7/2/76) - 0745 (7/3/76)			
<u>Date</u>	<u>Time</u>	<u>Windspeed (mph)</u>	<u>Wind direction (degrees)</u>
7/2/76	1755	2.75	100
	1800	2.50	360 v
	1830	2.25	035
	1900	2.50	280
	1930	2.50	155
	2000	2.75	360 v
	2030	3.00	305
	2100	2.75	305
	2130	3.50	290
	2200	3.50	280
	2230	3.25	270 v
	2300	5.00	050
	2330	5.75	015
	2400	5.00	025 v
	0030	4.00	015
7/3/76	0100	3.50	015
	0130	2.50	295
	0200	3.50	290
	0230	2.75	290
	0300	3.25	300
	0330	3.75	285
	0400	3.37	285
	0430	3.00	300
	0500	3.00	295
	0515	2.75	275
	0530	2.75	280
	0545	3.25	265
	0600	3.25	275
	0615	2.50	025
	0630	2.00	250
	0645	2.00	280
	0700	2.50	025
	0715	2.75	155
	0730	3.25	170
	0745	3.25	130
v = variable			
Spray period: 0554-0820			

Table 23.--Wind data for trial 2, plot 3 (East Fork Cabin Creek) - 7/5/76 - Orthene

Ground Instrument: Climatronics 2130 (7/4/76) - 1010 (7/5/76)			
<u>Date</u>	<u>Time</u>	<u>Windspeed (mph)</u>	<u>Wind direction (degrees)</u>
7/4/76	2130	1.00	270
	2200	1.00	210
	2230	1.00	240
	2300	1.00	160
	2330	1.00	220
7/5/76	2400	1.00	180
	0030	1.00	260
	0100	1.00	260
	0130	1.00	160
	0200	1.00	variable
	0230	1.00	downslope
	0300	1.00	185
	0330	1.00	325
	0400	0.50	180
	0430	1.00	270
	0500	1.50	320
	0515	1.00	095
	0530	1.00	220
	0545	0.50	045
	0600	1.00	110
	0615	1.00	140
	0630	1.00	210
	0645	1.00	240
	0700	1.00	transition
	0715	1.50	030
	0730	1.00	045
	0745	2.00	035
	0800	1.50	variable
	0815	1.50	upslope
	0830	2.00	025
	0845	1.50	085
	0900	1.50	085
	0915	3.00	065
	0930	3.00	upslope
	0945	2.50	080
	1000	4.00	085
	1010	4.50	080

Spray period: 0555-0858

Table 24.--Wind data for trial 2, plot 3 (East Fork Cabin Creek) - 7/5/76 -
Orthene

Ground Instruments:

Beckman and Whitney
1640 (7/3/76) - 1615 (7/4/76)

Beckman and Whitney
2200 (7/4/76) - 0900 (7/5/76)

Date	Time	Windspeed (mph)	Wind direction (degrees)
7/3/76	1640	5.00	315 <u>v</u>
	1700	3.50 variable	115
	1730	2.50	360 <u>v</u>
	1800	3.00	360 <u>v</u>
	1830	1.75	060
	1900	1.75 transition	020
	1930	1.75	360 <u>v</u>
	2000	3.25	295
	2030	4.00	040 <u>v</u>
	2100	4.25	060
	2130	3.00	020
	2200	3.25 variable	360 <u>v</u>
	2230	3.75 downslope	035
	2300	2.75	350
	2330	4.00	330
7/4/76	2400	2.50	020
	0030	4.00	035
	0100	4.25	320
	0130	4.00	350
	0200	4.50	280
	0230	4.00	285
	0300	3.75	273
	0330	4.00 downslope-	265
	0400	4.25 down canyon	265
	0430	4.00	270
	0500	4.25	280
	0530	4.25	285
	0600	4.25	285
	0630	4.00	280
	0700	3.75	345
	0730	3.25 transition	350
	0800	3.00	330
	0830	2.25	060
	0900	3.75	080
	0930	4.00	080
	1000	3.50	055
	1030	4.00	080
	1100	4.00	095
	1130	5.25	108
	1200	2.25 upslope	088
	1230	4.00	058
	1300	2.50	110
	1330	5.50	105
	1400	4.50	098
	1430	3.50	070
	1500	4.50	086
	1530	1.75	075
	1600	3.00	086
	1615	3.75	280 <u>v</u>

Date	Time	Windspeed (mph)	Wind direction (degrees)
7/4/76	2200	2.50	055
	2230	3.00	310
	2300	3.50	360
	2330	6.00	005
7/5/76	2400	8.00	235
	0030	3.00 variable	270
	0100	5.50	005
	0130	12.50 <u>g</u>	360 <u>v</u>
	0200	3.00	150 <u>v</u>
	0230	7.50	345
	0300	15.00	270
	0330	7.00	250
	0400	15.00 <u>g</u>	105 <u>v</u>
	0430	8.50	125
	0500	9.00	340
	0515	7.00	355
	0530	8.50	050
	0545	6.50 downslope*	035
	0600	14.50 <u>g</u>	015
	0615	5.00	020
	0630	3.50	030
	0645	5.50	225
	0700	3.00	290
	0715	2.25	285
	0730	2.50 transition	015
	0745	4.00	075
	0800	4.00	085
	0815	3.50	010
	0830	4.25 upslope	060
	0845	5.00	090
	0900	6.00	080

v = variable

g = gusty

Spray period: 0555-0858

* Site receives downslope flow from ridge to North (SW $\frac{1}{4}$ sec. 1 and NW $\frac{1}{4}$ sec. 12, T. 7 N., R. 4 E.) which is ~500 feet higher than Beckman and Whitney site.

Table 25.--Wind data for trial 3, plot 5 (Holloway Gulch) - 7/6/76 - Orthene

Ground Instruments:

Beckman and Whitney
1945 (7/5/76) - 0845 (7/6/76)Climatronics
2135 (7/5/76) - 0850 (7/6/76)

Date	Time	Windspeed (mph)	Wind direction (degrees)	Date	Time	Windspeed (mph)	Wind direction (degrees)
7/5/76	1945	4.00	285.0	7/5/76	2135	3.00	220
	2000	4.25	287.5		2200	2.50	265
	2030	5.00	275.0		2230	2.00	325
	2100	8.50	285.0		2300	1.75 variable	280
	2130	5.50	310.0		2330	0.75 downslope	310
	2200	5.50	275.0	7/6/76	2400	2.75	155
	2230	5.50	265.0		0030	1.50	310
	2300	5.00	275.0		0100	1.00	320
	2330	4.25	255.0		0130	1.00	280
7/6/76	2400	6.00	260.0		0200	0.25	275
	0030	5.50	275.0		0230	1.00	300
	0100	5.50	272.5		0300	1.50	315
	0130	5.75	310.0		0330	1.50	320
	0200	5.75	290.0		0400	0.75	280
	0230	5.50	280.0		0430	1.50 downslope-	320
	0300	5.75	275.0		0500	2.00 down canyon	310
	0330	6.25 downslope	275.0		0515	0.25	220 <u>v</u>
	0400	4.25	320.0		0530	1.00	320
	0430	5.50	270.0		0545	1.00	325
	0500	6.25	300.0		0600	0.25	015
	0515	5.75	290.0		0615	1.00	330
	0530	5.75	270.0		0630	1.25	335
	0545	5.00	305.0		0645	1.75	315
	0600	5.00	285.0		0700	1.00	330
	0615	5.50	280.0		0715	1.00	350
	0630	5.00	280.0		0730	2.00 transition	170
	0645	5.50	295.0		0745	2.00	280
	0700	5.50	275.0		0800	2.00	165
	0715	5.25	285.0		0815	1.00	165
	0730	4.00	345.0		0830	2.00 upslope	160
	0745	5.00 transition	305.0		0850	1.00	150
	0800	3.00	015.0				
	0815	3.50	100.0				
	0830	5.25 upslope	115.0				
	0845	4.75	125.0				

v = variable

Spray period: 0546-0723

Table 26.--Wind data for trial 4, plot 2 (Sulphur Bar Creek) - 7/7/76 -
Dylox

Ground Instruments:

Beckman and Whitney
2010 (7/6/76) - 0840 (7/7/76)

Climatronics
2030 (7/6/76) - 0843 (7/7/76)

Date	Time	Windspeed (mph)	Wind direction (degrees)
7/6/76	2010	4.00	340
	2030	3.00	045
	2100	1.00	315
	2130	5.50	070
	2200	4.25	360
	2230	1.00	005 <u>v</u>
	2300	1.50	360 <u>v</u>
	2330	2.50	145
7/7/76	2400	1.00	360 <u>v</u>
	0030	1.50	055
	0100	1.75	090
	0130	1.75	120
	0200	1.25 variable	130
	0230	2.00	297
	0300	2.00 downslope	073
	0330	2.25	120
	0400	2.50	030
	0430	2.25	015
	0500	2.00	360 <u>v</u>
	0515	2.00	040
	0530	2.00	055
	0545	1.50	085
	0600	1.00	290
	0615	1.00	032
	0630	1.50	055
	0645	2.00	050
	0700	1.00	085
	0715	1.75	020
	0730	1.00	080
	0745	1.25	020
	0800	1.50	050
	0815	2.75 transition	030
	0830	3.00	250
	0840	1.50	305 <u>v</u>

Date	Time	Windspeed (mph)	Wind direction (degrees)
7/6/76	2030	2.00	060
	2100	1.00	115
	2130	12.00	050
	2200	4.00	090
	2230	1.75	150
	2300	2.00	145
	2330	2.00	150
	2400	4.25	070
7/7/76	0030	4.00	110
	0100	2.00	160
	0130	1.75	150
	0200	2.00	360
	0230	1.25 variable	135
	0300	2.50	110
	0330	2.50 downslope	070
	0400	3.00	060
	0430	3.00	060
	0500	2.50	055
	0515	2.00	080
	0530	3.00	055
	0545	1.50	055
	0600	3.00	060
	0615	2.50	200
	0630	2.00	015
	0645	1.25	040
	0700	4.00	350
	0715	1.50	130
	0730	2.00	040
	0745	3.00	030
	0800	1.50	330
	0815	1.50 transition	260
	0830	2.50	250
	0843	2.00	160

v = variable

Spray period: 0545-0745

Table 27.--Wind data for trial 5, plot 7 (Vermont Gulch) - 7/8/76 - Dylox

Ground Instruments:							
Beckman and Whitney				Climatronics			
1932 (7/7/76) - 0840 (7/8/76)				2035 (7/7/76) - 0820 (7/8/76)			
Date	Time	Windspeed (mph)	Wind direction (degrees)	Date	Time	Windspeed (mph)	Wind direction (degrees)
7/7/76	1932	3.00	--	7/7/76	2035	2.00	330
	2000	2.00	--		2100	2.00	300
	2030	2.25	--		2130	1.50	310
	2100	2.50	--		2200	1.50	210
	2130	2.75	--		2230	1.25	335
	2200	2.25	--		2300	2.25	315
	2230	2.00	--		2330	2.25 downslope	315
	2300	2.25	--	7/8/76	2400	1.25	300
	2330	2.25	--		0030	2.25	300
7/8/76	2400	2.00	--		0100	0.50	295
	0030	2.25	--		0130	1.75	310
	0100	2.00	--		0200	2.00	310
	0130	2.00	--		0230	0.25	285
	0200	2.25	--		0300	1.60	300
	0230	2.50	--		0330	2.00	305
	0300	2.50	--		0400	1.80 downslope-	305
	0330	2.25	--		0430	1.00 down canyon	290
	0400	2.25	--		0500	1.00	300
	0430	2.25	--		0515	1.50	300
	0500	2.00	--		0530	1.50	300
	0515	2.00	--		0545	2.25	310
	0530	2.00	--		0600	1.25	310
	0600	2.50	--		0615	0.25	275
	0615	2.25	*230		0630	3.00	140
	0630	1.50	235		0645	1.00	265
	0645	4.00	260		0700	2.50	165
	0700	2.00	270		0715	0.50 transition	075
	0715	2.50 variable	240		0730	1.00	190
	0730	2.00	235		0745	2.50	150
	0745	2.00	235		0800	3.50	180
	0800	2.25	275		0815	1.25	165
	0815	1.50	140 <u>v</u>		0820	1.75	190
	0830	1.50	110				
	0840	2.50	175				

v = variable

Spray period: 0541-0707

* wind direction recorder turned on at 0613, 7/8/76

Table 28.--Wind data for trial 6, plot 8 (Spring Creek) - 7/9/76 - Orthene

Ground Instrument: Beckman and Whitney
1036 (7/8/76) - 0900 (7/9/76)

Date	Time	Windspeed (mph)	Wind direction (degrees)	Date	Time	Windspeed (mph)	Wind direction (degrees)
7/8/76	1036	1.75	015 <u>v</u>	7/9/76	2400	1.75	310
	1100	3.50	100		0030	2.00	310
	1130	1.75	280		0200	2.75	325
	1200	1.75	285		0230	2.37	330
	1230	3.00	265		0300	2.00	315
	1300	2.25	360 <u>v</u>		0330	2.25	297
	1330	4.25	045 <u>v</u>		0400	2.50	307
	1400	4.50	293		0430	2.00	025
	1430	4.50	025 <u>v</u>		0500	2.25	035
	1500	6.00	295		0515	2.00	320
	1530	2.25	030 <u>v</u>		0530	2.00	320
	1600	2.25	320		0545	2.00	325
	1630	2.50	215		0600	2.00	340
	1700	2.50	245		0615	2.25	300
	1730	3.25 Crosswinds	320 <u>v</u>		0630	2.00 Crosswinds	315
	1800	5.00	280		0645	1.75	030
	1830	4.50	315		0700	2.25	050
	1900	2.25	360 <u>v</u>		0715	2.25	075
	1930	3.25	295		0730	2.25	080
	2000	3.75	305		0745	2.25	330
	2030	1.75	010		0800	0.75	115
	2100	4.25	295		0815	2.00	360 <u>v</u>
	2130	2.00	360		0830	2.00	225
	2200	2.25	310		0845	2.00	240
	2230	2.25	325		0900	1.50	125
	2300	2.75	325				
	2330	2.00	320				

v = variable

Spray period: 0558-0731

Table 29.--Wind data for trial 6, plot 8 (Spring Creek) - 7/9/76 - Orthene

Ground Instrument: Climatronics

0855 (7/8/76) - 0820 (7/9/76)

Date	Time	Windspeed (mph)	Wind direction (degrees)	Date	Time	Windspeed (mph)	Wind direction (degrees)
7/8/76	0900	1.50	215	7/9/76	2400	1.75 downslope	280
	0930	1.50	350		0030	3.00	275
	1000	3.75	035		0100	4.00	285
	1030	2.50	345		0130	4.50	285
	1100	6.50	065		0200	3.00	290
	1130	3.00	360		0230	2.00	265
	1200	3.00	065		0300	3.00	290
	1230	5.00	345		0330	3.75 downslope-	285
	1300	4.50	310		0400	4.25 down canyon	285
	1330	2.50 variable	060		0430	2.80	270
	1400	3.50	160		0500	1.00	210
	1430	4.50	100		0515	3.50	280
	1500	3.00	090		0530	3.00	270
	1530	3.00	335		0545	3.00	280
	1600	3.00	065		0600	3.50	275
	1630	5.50	145		0615	3.80	295
	1700	1.50	110		0630	3.00	280
	1730	1.00	255		0645	3.00	295
	1800	3.00	240		0700	0.50	220
	1830	3.50	310		0715	1.00 transition	345
	1900	3.50	300		0730	0.50	360
	1930	3.00	025		0800	2.50 upslope	070
	2000	3.50	290		0820	2.00	090
	2030	2.00	335				
	2100	1.50	310				
	2130	0.25 downslope	315				
	2200	4.50	290				
	2230	4.00	290				
	2300	4.80	300				
	2330	4.25	290				

Spray period: 0558-0731



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